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Part II

Environmental Protection Agency

Pollution Control From New Motor Vehicles and New Motor Vehicle Engines

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 80, 86, and 600

[AMS–FRL 1931–1 Docket No. A–81–27]

Control of Pollution From New Motor Vehicles and New Motor Vehicle Engines; Revisions to Motor Vehicle Emission Certification Procedures

AGENCY: Environmental Protection Agency.

ACTION: Interim final rule.

SUMMARY: This action revises the motor vehicle emission certification procedures for 1982 and later model year light-duty vehicles, light-duty trucks, and heavy-duty engines. These revisions are designed to provide specific reductions in the cost and resource requirements over the current certification program. These revisions to the motor vehicle certification program were announced by the Vice President on April 6, 1981 in an EPA notice of intent published on April 13, 1981 (46 FR 21628). Although these revisions will reduce some EPA certification oversight and some vehicle compliance testing requirements, EPA does not anticipate that they will affect air quality. These changes are interim measures designed to reduce the administrative burdens of emission certification while EPA develops and implements a new motor vehicle compliance program. In order to save time and printing costs, some nonrelated technical amendments and corrections have also been included in this rulemaking.

DATES: These regulations are effective October 13, 1981. EPA will, however, consider comments on this rule received within 30 days after publication of this notice. (See section VIII of this preamble—Public Participation).

ADDRESS: Material relevant to this interim final rule is contained in Public Docket No. A–81–27. The docket is located at the U.S. Environmental Protection Agency, Central Docket Section, West Tower Lobby, Gallery I, 401 M Street, S.W., Washington, D.C. 20460. The docket may be inspected between 8:00 a.m. and 4:00 p.m. on weekdays and a reasonable fee may be charged for copying. Please submit written comments to: U.S. Environmental Protection Agency, Central Docket Section (A–130), Attn: Docket No. A–81–27, Waterside Mall, West Tower Lobby, Gallery I, 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Thomas M. Ball, Certification Policy and Support Branch, Certification Division, 2565 Plymouth Road, Ann Arbor, Michigan 48105, Phone: (313) 668–4280.

SUPPLEMENTARY INFORMATION:

I. Applicability

The provisions of these regulations apply to 1982 and later model year light-duty vehicles, light-duty trucks, and heavy-duty engines.

II. Background

Section 203(a)(1) of the Clean Air Act (Act) prohibits the sale, offering for sale, the introduction into commerce, the delivery for introduction into commerce, or the importation of any new motor vehicle unless the vehicle is covered by a certificate of conformity issued under regulations prescribed under sections 202 and 206 of the Act. Section 206(a)(1) of the Act directs the EPA Administrator to each year test or "require to be tested in such manner as he deems appropriate" any new vehicle submitted by the manufacturer to determine if the vehicle conforms with the regulations. Under these provisions, EPA established regulatory requirements that motor vehicle manufacturers must follow in order to obtain a certificate of conformity. These regulatory requirements constitute the EPA motor vehicle certification program. The current certification program has evolved during the past 10 years. During that time the development of emission control technology was being forced at an accelerated rate by emission standards that periodically increased in stringency. During that period of rapidly changing vehicle emission control strategies and the continuous creation of new control systems and components, it was necessary to closely control the certification of new vehicle designs to assure that production vehicles were capable of meeting emission standards throughout their useful lives.

EPA and the industry have both gained a great deal of emission control experience since the beginning of the emission control program, and the state-of-the-art of emission control components has improved. Also, the emission standards are now stabilizing. This stabilization allows for greater confidence in the control systems due to the reduction in the rate of innovation. EPA now believes that this maturity and stability should allow EPA to be more flexible in its evaluation of familiar control strategies and equipment. It should be noted, however, that technical innovation and change continue for other reasons, primarily for fuel efficiency and less costly emission control systems. For this reason the annual certification demonstration is still necessary, but perhaps on a more limited scale, until EPA develops more comprehensive changes to the motor vehicle emission compliance programs.

The industry has already conducted portions of the certification program on its own under the Abbreviated Certification Review procedure. The Abbreviated Certification Review procedure, initiated by EPA in the 1980 model year, allows the manufacturers to take certain certification actions without prior EPA approval. Manufacturers readily adopted this procedure and now routinely make decisions for many aspects of the certification program.

Given all these factors, the Agency can be reasonably well assured that no detrimental air quality impact will result from the implementation of these changes. These changes will increase, to a certain extent, the risk that some noncomplying vehicles may be produced. However, considering the need for the cost and resource savings that these changes should produce, EPA does not believe that this slight increase in risk is significant.

EPA is currently evaluating alternative methods to assure motor vehicle emissions compliance. These alternatives may, in the long term, replace the current preproduction certification program. Such a comprehensive change in the mobile source emission compliance process will require several years to develop, propose, and implement and could also require statutory changes. The revisions to the current certification program that are announced in this final rule will help reduce regulatory costs while a more cost beneficial program is developed.

III. Description of Changes

Many of the changes described below discuss the transfer of the responsibility for conducting portions of the certification program from the Agency to the industry. To maintain consistency throughout the certification program these transfers of responsibility will be accomplished using the provisions of the Abbreviated Certification Review process (§ 86.080–12). The regulations published today will specify that the Administrator is to take certain actions. Then under § 86.080–12(a)(3)(ii) the Administrator will allow the manufacturers to assume the responsibility for some of these actions. The use of this approach allows the Administrator to transfer an engine family to the complete review procedure if it can be shown that the manufacturer has acted inappropriately. EPA can be confident that any errant manufacturer can be dealt with individually without the necessity of restricting the

flexibilities extended to the remainder of the industry. As pointed out above the use of this approach requires that the regulations be written specifying that the Administrator take certain actions. In this preamble, however, where it is intended that the manufacturer assume the responsibility for a certain action under § 86.080–12(a)(3)(ii) we have opted, for clarity, to simply state that the manufacturer will take the action.

A. General Changes

1. Broaden engine family definition:

Section 86.082–24(a)(1) establishes the concept of segmenting a manufacturer's product line into test groups (engine families) based on expected emissions characteristics. Section 86.082–24(a)(2) goes further by establishing a list of mandatory parameters that must be identical if engines are to be included in the same engine family. Additional discretionary parameters that may be used to further subdivide engine families are listed in § 86.082–24(a)(3).

Modern emission control system technology depends more on auxiliary after-treatment devices (catalysts) than on minor variations in basic engine design. It has therefore become appropriate to increase the flexibility allowed in considering the minor dimensional parameters contained in the present mandatory engine family criteria. These criteria will, however, still be available as discretionary criteria for use in defining an engine family at the manufacturer's option. The change involves moving the following parameters from mandatory criteria to optional criteria:

(1) The dimension from the centerline of the crankshaft to the centerline of the camshaft.

(2) The dimension from the centerline of the crankshaft to the top of the cylinder block head face.

In the particular cases where engine families are otherwise the same, the removal of these parameters as mandatory family determinants will allow the combination of these engine families, thus reducing testing and paperwork costs. This will also facilitate carryover of data from previous model years if the manufacturer makes minor changes to the engine.

2. Allow implementation of running changes without prior EPA approval:

Under current requirements, if a manufacturer intends to add a vehicle to an engine family that has already been certified (§ 86.079–32), or if it intends to make changes to currently certified vehicles that may affect emissions (§ 86.079–33), the manufacturer must request EPA approval for the change. Following this submittal the Administrator evaluates the change and establishes testing requirements if necessary. If this testing is successful, the Administrator approves the change and the manufacturer may then implement the change in production. These changes during production are called "running changes."

With the advent of the Abbreviated Certification Review procedure, manufacturers have been encouraged to evaluate their proposed changes and determine and conduct what they consider to be appropriate testing. This has allowed manufacturers to submit completed running change packages (including appropriate test data) to EPA with requests for approval of the changes. EPA personnel then review these requests and approve them if the changes are acceptable. This procedure has been very successful and the manufacturers have developed and demonstrated the ability to establish satisfactory test requirements for approving changes.

This rule change will allow manufacturers to add vehicles to a certified engine family and to implement running changes without prior EPA approval. The manufacturer will be responsible for determining that all vehicles still comply with emission standards following implementation of any running change. The manufacturer's determination may be based on either an engineering evaluation of the change and/or emission test data. The manufacturer will be required to notify EPA of all running changes as they are approved for implementation and supply EPA with the documentation necessary for updating the application for certification. EPA will retain the right to specify additional test vehicles and/or conduct confirmatory testing for any vehicle addition or running change. If EPA requires additional data, the manufacturer will have 30-days to provide these data or rescind the addition or change. EPA may grant an extension to this time limit if necessary.

If, by reviewing or auditing a manufacturer's documentation and data, by requiring additional and/or confirmatory testing, or based on any other information, EPA determines that the manufacturer has added vehicles to its product line, implemented running changes, or implemented combinations of running changes that result in the vehicles affected by these additions or changes to fail to comply with the emission standards, EPA will notify the manufacturer to rescind the addition, change, or changes immediately. As is currently provided in § 86.079–34(d), the manufacturer would be deemed to have consented to recall all vehicles approved under this proposal, and subsequently found not in compliance with the emission standards.

Under the Abbreviated Certification Review procedure, manufacturers have routinely evaluated running changes and determined test requirements for running change approval. Therefore, EPA does not anticipate this change will significantly increase noncompliance risks.

The major benefit to manufacturers that should result from this change is the ability to implement production changes without advance EPA approval. This should result in better production planning translating into reduced cost. This change will also benefit EPA in that less resources will be required to review and approve the substantial number of running changes submitted each year.

3. Expanded zero-mile limits:

"Zero miles" is currently defined in § 86.078–2 as "that point after initial engine starting (not to exceed 10 miles of vehicle operation, or one hour of engine operation) at which normal assembly line operations and adjustments are completed."

Under this definition of "zero miles," only the first emission test performed on a given vehicle can be considered the zero-mile test, even if the test is invalid. Consequently, if the first test is invalidated, the manufacturer may not have accurate zero-mile test results and may have to run extra backup vehicles to ensure that one vehicle is representative of design intent. In addition, manufacturers frequently have to make special shipping arrangements in order to get the vehicle from the point of assembly to the testing laboratory without exceeding the 10-mile limit. This usually means trailering the vehicle instead of driving it, resulting in unnecessary increased vehicle handling costs.

This action changes the definition of "zero miles" to expand the limits to 100 miles and three (3) hours and permits retesting within these limits until one valid test is achieved. For heavy-duty engines, this action will expand the number of hours an engine may accumulate prior to initiation of service accumulation from one (1) to six (6) hours.

The present definition of "zero-miles" hampers the efficient handling, initial testing, and mileage accumulation start-up of the manufacturer's certification test vehicles. Under this change, manufacturers will be able to efficiently move their test vehicles within and between their various assembly and

testing facilities. Also, sufficient testing (one valid test) may be conducted to ensure that test vehicles and engines conform to manufacturers' design intent. If a manufacturer determines that a test vehicle must be recalibrated following the initial zero-mile test, he will be able, under this change, to perform an additional valid zero-mile test to confirm the new calibration's performance. This expansion of the zero-mile limits should reduce the administrative and cost burdens of this portion of the current process without significantly increasing the risk of vehicle noncompliance.

The benefit to the industry would be the increased flexibility and reduced cost involved in the physical manipulation of test vehicles and in the identification and correction of prototype vehicle assembly problems.

4. Mileage accumulation fuel specifications tied to in-use survey:

Section 86.113–79 contains the specifications for mileage accumulation fuels for gasoline-fueled and diesel light-duty vehicles and light-duty trucks (similar sections exist for heavy-duty engines). These specifications were established to ensure that mileage accumulation fuels would be typical of in-use fuels and that manufacturers did not attempt to bias their emission test data by accumulating mileage using special fuels.

The minimum lead content specification contained in the present leaded mileage accumulation fuel requirements needs to be updated to ensure that mileage accumulation fuels continue to accurately reflect in-use fuels and to ensure that acceptable mileage accumulation fuels are readily available to all manufacturers. Rather than continually revising the existing regulatory specifications to reflect lead content in current fuels, this action will base the minimum lead content specification on a periodic in-use fuel survey. This practice ensures that these fuels will represent in-use fuels and be easily obtainable.

This change would require the leaded gasoline used for service accumulation to contain an amount of lead equal to or greater than the average lead content of commercially available regular leaded gasoline found in the periodic fuel survey specified by the Administrator.

The benefit of this change to the industry will be decreased fuel costs and increased ease of obtaining mileage accumulation fuel. This change primarily affects heavy-duty manufacturers since few light-duty vehicles still use leaded fuel.

5. Modify the requirement for certain optional equipment to be installed on certification test vehicles:

Section 86.082–24(g)(3) requires that all optional equipment with over a 33 percent installation rate that may affect emissions be actually installed on test vehicles. This requirement was established to ensure that the test vehicles represented production vehicles as accurately as possible.

This rulemaking allows manufacturers more flexibility in the installation of optional equipment on certification test vehicles. This change will allow manufacturers, at their option, to determine by test data or engineering evaluation that the actual installation of certain optional equipment presently required to be installed on test vehicles does not affect the emissions or fuel economy values generated by these vehicles and, as a result, need not be actually installed. The weight of the options will still be required to be represented in the weight of the test vehicles. This change in no way affects the 10 percent increase in road-load horsepower used to represent air-conditioning which will continue to be handled as it is presently. The engineering evaluation, including any test data, used to support the deletion of optional equipment from test vehicles must be maintained by the manufacturer and be available to EPA upon request. The benefit to the industry of this change would be reduced cost due to reduced equipment installation and reconfiguration expenses.

6. Modify the requirements for test vehicle information and data submittal:

Section 86.082–26(a)(7) makes it necessary for the manufacturer to notify EPA of the existence of all test vehicles prior to the initiation of mileage accumulation. Under the current Abbreviated Certification Review process, the manufacturers notify EPA of the existence of all potential certification vehicles by the submittal of selected vehicle information and test data, when applicable, at the zero-mile point. The deadlines for data reporting are contained in § 86.082–26(a)(6)(i) which requires that all test data be air posted to EPA within 24 hours or delivered within three working days.

This change will delete the zero-mile vehicle reporting requirement. The manufacturer will not be required to report the existence of a test vehicle or provide information or data until the vehicle generated data that are intended for use in the certification process. This would likely occur after the 5,000-mile test point for a durability-data vehicle and after the first emission-data test for an emission-data vehicle. After this testing takes place and the manufacturer determines that these data will be used in the certification process, the manufacturer would be required to notify EPA of the existence of the vehicle and to assemble and maintain the necessary vehicle information and a complete vehicle test and maintenance history. This information would be available for EPA audit and would become part of the manufacturer's application for certification.

This change should relieve manufacturers of the responsibility for assembling and reporting the necessary information and test data for vehicles that are ultimately not used in the certification process. The reduction in the manufacturers' reporting requirements also reduces the data available for EPA to use in its evaluation of the manufacturers' products. The deletion of this reporting requirement will not, however, significantly increase the risk of noncompliance over that of the present requirement. All required test vehicles will still have to demonstrate compliance with the standards. The most significant risk is that a manufacturer will have a marginally noncomplying design which it insignificantly recalibrates and retests, following a failing test, hoping to pass the retest due to the vehicle-to-vehicle or test-to-test variability. However, EPA expects that this will occur infrequently and therefore will not represent a significant risk of inappropriate certification.

Also, as a part of this change, the present data reporting deadlines will be expanded to allow manufacturers to report data on a weekly basis. This change will reduce manufacturers' data reporting inconvenience and will have no effect on the level of risk of noncompliance.

The benefit to the industry will be in the form of reduced reporting costs and paperwork burden.

B. Durability Procedure Changes

1. Allow assigned deterioration factors for low sales volume engine families:

Sections 86.082–24(e) and 86.082–14(c)(7)(i)(B) currently allow some manufacturers to use assigned deterioration factors under certain restricted circumstances. Assigned deterioration factors are currently available to manufacturers that sell less than 10,000 total units (light-duty vehicles, light-duty trucks, and heavy-duty engines) in the United States or to manufacturers that sell less than 2,000 units in certain classifications.

This rulemaking will allow any manufacturer, regardless of size, to use assigned deterioration factors (d.f.'s) for low sales volume engine families. The use of assigned d.f.'s will only apply to entire engine families and will be limited to a combined total of 10,000 units per manufacturer for each model year.

The assigned deterioration factors that will be used will continue to be determined by EPA based on a technical evaluation of available data. When sufficient data to determine valid factors are unavailable for a particular type of engine or emission control system no factors will be established and manufacturers may be required to run durability-data vehicles or engines for the families affected. This type of situation may arise due to a change in emissions standards or due to the introduction of new technology (alternative engine design, etc.).

If all manufacturers that will be affected by this change take full advantage of assigned deterioration factors, the increase in the number of vehicles and/or engines certified using assigned deterioration factors will be less than 250,000 or approximately 2 percent of total sales. EPA also expects that the manufacturers electing to use assigned deterioration factors will generally apply them to engine families that are similar to other engine families (e.g., same basic engine, etc.) that have demonstrated durability through vehicle or engine testing. Because of the small percentage of vehicles and engines involved, the expected similarity to other certified designs, and because emission-data vehicles or engines will still be required to demonstrate compliance with the applicable standards, no significant increase in the level of risk of noncompliance over the current program is anticipated.

This change will allow the large domestic manufacturers greater flexibility in marketing small sales engine families. Families for which sales were too small to justify the expense of a durability-data vehicle or engine can now be certified using assigned deterioration factors. This should encourage marketing of vehicles designed for specific purposes and representing technological innovations.

2. Allow interpolated 4,000-mile durability-data point linecrossing:

The acceptability criteria for durability data are specified in § 86.082–28(a)(4)(i)(B). Under these requirements either the interpolated 4,000- and 50,000-mile data points must both be below the standard, or all of the applicable actual test points must be below the standard before these data can be used in the certification process.

It is possible for the 4,000-mile interpolated value to be above the standard due to the line-fitting process, while the remainder of the fitted line is below the standard and the 50,000-mile interpolated value is also below the standard. If, under these circumstances, the 4,000-mile interpolated value and one actual test value (regardless of the mileage point at which this actual test occurred) were above the applicable emission standard, the entire data set generated by the vehicle would currently not be considered acceptable and would be rejected.

This change would allow the data to be used whenever the 4,000-mile interpolated value is above the standard as long as the 50,000-mile interpolated value is below the standard (negatively sloped best fit line) and the 5,000-mile actual test value (the closest actual test point to 4,000-mile) is also below the standard.

Although 4,000-mile linecrossing does not occur frequently (manufacturers have informally indicated to EPA that this occurs about once a year for each major manufacturer), domestic manufacturers have indicated that this is one of the reasons they currently run additional backup durability-data vehicles as insurance against a vehicle generating unusable data. By allowing linecrossing at 4,000 miles, manufacturers may need to run fewer backup vehicles.

3. Allow flexible durability-data vehicle test intervals:

Sections 86.082–26(a)(4) and (5) specify 5,000-mile test intervals with a 250-mile tolerance for durability-data vehicles. This final rule allows manufacturers to determine their durability-data test intervals, subject to certain restrictions. Prior to the initiation of mileage accumulation on a durability-data vehicle, the manufacturer will establish the mileage interval for durability testing for the engine family represented by that vehicle. The test interval need not be the same for all engine families. Once testing has begun on a durability-data vehicle, the durability test interval for that family may not be changed. At a minimum, tests must be performed at 5,000 and 50,000 miles. The mileage interval between test points must be of equal length except for the interval between zero-mile and 5,000 miles, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance. The 250-mile test point mileage tolerance will be retained. The requirement that tests be conducted before and after scheduled maintenance will also be retained.

The benefit to the industry of the implementation of this change will be in the form of increased program control within manufacturers' testing processes. Manufacturers will be able to decrease the number of tests performed and to optimize their remaining laboratory work flow by establishing test intervals that allow maximum testing efficiency.

4. Allow multiple tests at durability test points and establish an outlier procedure for durability data:

Section 86.082–26(a)(6)(i) requires the manufacturer to conduct the same number of tests at each test point. Section 86.082–28(a)(4)(i)(A) essentially requires that all valid data from tests conducted at specified test points be used in the deterioration factor calculation.

With this rulemaking, a manufacturer will be allowed to conduct multiple tests at any durability-data test point. These data must then be averaged to create a single value that would be used to represent that test point in the deterioration factor calculation. When using this option to generate data for a particular test point, the manufacturer must include in the average all valid test data generated at that test point.

Manufacturers will also be allowed to use a statistical data outlier criterion to automatically reject any data point that does not fit in the pattern of the rest of the data points and therefore may be in error. The outlier identification procedure that will be used will be specified by the Administrator. The outlier procedure will be optional for each manufacturer and, when used, shall be applied to all data from a category of vehicles or engines (i.e., light-duty vehicles, light-duty trucks, or heavy-duty engines) within a manufacturer's product line for the model year. The criterion can only be applied to each test vehicle's entire data set. (If manufacturers had been allowed to use the outlier procedure as an option for each individual vehicle or data point, they might have been able to bias the data base by only using the procedure when it was to their advantage.) If the procedure is used and it identifies a data point as an outlier, the data point will be automatically rejected from the data set. This statistical outlier procedure is only performed after the completion of the 50,000-mile durability testing sequence. Where the manufacturer chooses to apply the outlier procedure to a data set that contains multiple test data which are averaged, the averaging shall be completed prior to applying the outlier procedure.

These data handling changes will allow EPA and manufacturers to eliminate or offset test results that are of questionable validity. In most cases, the invalidity of a test result can clearly be determined by identifying procedural problems with the tests, or by identifying an overt vehicle malfunction that occurred during the test. However, in many cases a test value will be questionably out of line with the characteristic performance of the vehicle with no indication of a reason. This rule change will allow manufacturers to conduct additional tests at a given test point to confirm the level of the first test. By conducting additional tests and averaging all results, the confidence in the test point results will be increased. If a particular test result is far enough from the group of data over the entire 50,000 miles, it can be eliminated by the outlier procedure. This change could allow manufacturers to reduce the number of backup durability-data vehicles that they run.

5. Allow manufacturers to modify scheduled maintenance after beginning durability mileage accumulation:

Section 86.079–25 requires that the manufacturer establish a maintenance schedule prior to the initiation of mileage accumulation for use throughout a durability-data vehicle's testing. EPA has generally not allowed changes in the maintenance schedule during mileage accumulation. These requirements were established to prevent the manipulation of test vehicle maintenance which might have resulted in a favorable deterioration factor or prevented durability-data vehicle failure.

Generally, vehicles currently being produced no longer require as extensive scheduled maintenance as the vehicles in past model years. In many cases a tune-up now involves little more than changing spark plugs. This less extensive maintenance is due to overall product improvements and the use of unleaded fuel. In light of the less comprehensive nature of current scheduled maintenance, EPA is increasing the allowable flexibility in the scheduling of routine maintenance for durability-data vehicles.

This change will allow a manufacturer, at its option, to revise the maintenance schedule after durability-data vehicle testing has started. This would allow a manufacturer to initiate durability-data testing using one maintenance schedule and then, based on a technical evaluation that indicates the need for altering this schedule, revise the maintenance schedule and complete durability testing, using the revised schedule. The manufacturer must use the revised schedule for recommending maintenance to the ultimate consumer. (The manufacturer could, however, still recommend a different schedule to consumers by evaluating and justifying the difference between the actual maintenance performed on the test vehicle and the maintenance recommended to the consumer.) This change will only allow the substitution of one acceptable maintenance schedule for another, and all other current scheduled maintenance requirements remain unchanged.

The effect of this change is to allow the manufacturer to "fine tune" its maintenance schedule without risking the disqualification of an expensive durability-data vehicle. If the manufacturer determines that an engine family needs additional maintenance or shorter maintenance intervals in order to meet useful life emission standards, the manufacturer may make the change during the durability sequence as long as the scheduled maintenance recommended to the consumer is the same as performed on the durability-data vehicle. Conversely, the manufacturer could also eliminate maintenance items that it has determined are not necessary as long as the maintenance operation is deleted from the maintenance schedule *prior* to the performance of that operation on the test vehicle. The scheduled maintenance performed on the durability-data vehicles must still be representative of recommended maintenance to the ultimate purchaser.

The benefit to the industry of this change will be reduced durability-data vehicle costs. The ability to revise the maintenance schedule and continue to use the vehicle to generate data in lieu of being required to run additional vehicles has the potential for generating savings. In addition, the manufacturers will gain flexibility in reacting to unanticipated vehicle conditions that indicate that the original maintenance schedule may not have been appropriate. Also, not allowing the manufacturers to change their maintenance schedules after the initiation of mileage accumulation, as is presently done, causes the manufacturers to overestimate the necessary maintenance to ensure that the vehicle will not develop any problems that could have possibly been prevented by more frequent maintenance. If the manufacturers are allowed to adjust their maintenance schedules, as allowed by this change, it will no longer be necessary to continue to recommend unnecessary maintenance. This could lead to an overall reduction in the actual maintenance required resulting in substantial savings to both manufacturers and consumers.

6. Alternative Durability Program modifications:

The Alternative Durability Program was introduced on June 30, 1980 with the intent of providing a more flexible, less costly procedure to determine vehicle deterioration factors. Comments from manufacturers and our own analysis indicate that the criteria for grouping engine families into engine family groups are unnecessarily restrictive.

An intent of the Alternative Durability Program is to group vehicles of characteristically similar emission deterioration to determine a set of composite deterioration factors. Currently, such an engine family group is restricted to a manufacturer's engine family-emission control system designs that are identical in combustion cycle, cylinder block configuration, displacement and basic type of catalyst used. However, some additional designs might also be most appropriately grouped together. For example, some engines which differ slightly in displacement may exhibit characteristically similar emission deterioration due to their otherwise general similarity in design and construction. In order to allow the flexibility to group these designs, EPA is amending the regulation to allow a manufacturer to further group its designs upon demonstration to EPA that the designs are expected to get characteristically similar emission deterioration performance.

In addition, the current regulations separate light-duty vehicles from light-duty trucks to determine separate engine family groups. Often, however, engine family-emission control system combinations used by a particular manufacturer in its cars and trucks are sufficiently similar to allow carry-across of the emission deterioration data from one application to the other. Due to this similarity, EPA is amending the Alternative Durability Program regulations to allow a manufacturer to group light-duty vehicle and light-duty truck designs into an engine family group.

This change to the Alternative Durability Program will not alter the stringency of the certification requirements nor, because of the manufacturer's voluntary participation, will they cause an increased burden on the regulated industry.

C. Emission-Data Procedural Changes

1. Emission-data vehicle selection changes and reconfiguration:

Section 86.082–24(b)(1) specifies the requirements for selecting light-duty emission-data vehicles for testing to demonstrate compliance with exhaust emission standards. Typically, one vehicle selection based on highest projected sales and 2 or 3 vehicle selections based on expected "worst-case" emissions are tested for every engine family certified. The regulations also require vehicles to be tested to represent any additional untested engine/emission control system combinations, but this is seldom necessary since there is typically only one engine/emission control system combination per engine family.

Once a manufacturer's test fleet has been determined, a separate emission-data vehicle is built to represent each configuration selected. Each of these vehicles is then operated for 4,000 miles and tested. This 4,000-mile test data (after application of appropriate deterioration factors) serves as the basis for determining compliance with the emission standards.

The requirement to construct and run a separate emission-data vehicle to represent each configuration specified in the test fleet is contained in § 86.082–24(b)(1) and § 86.082–26(a)(3). These sections require vehicles, fully equipped with appropriately calibrated emission control systems, to complete the entire 4,000-mile test procedure without interruption or alteration (installed and operating for 4,000 miles). This practice created a large test vehicle sample and provided broad representation of the manufacturer's product line by the test fleet. Each of these vehicles provided additional assurance that the total population of vehicles represented by the test fleet was in compliance with the emission standards. This additional assurance was particularly important in the early certification procedure since limited experience with new designs made it difficult to determine worst-case vehicles.

Increased familiarity with the present technology has given the Agency and the industry greater confidence in their ability to identify and select the worst-case configurations for testing. Also, under the Abbreviated Certification Review procedure the manufacturers are responsible, with EPA audit oversight, for selecting their emission-data vehicles. Manufacturers now routinely select their own emission-data vehicles.

This change will reduce the number of emission-data vehicles required for certification. The test vehicle selection criteria under this change will require the manufacturer to select two exhaust emission-data vehicle configurations for each engine family. One selection will be based on fixed criteria. The manufacturer will select the second vehicle configuration from the remaining vehicles in the engine family based on the highest expected exhaust emission levels (worst-case). In addition, this change will allow vehicles to be reconfigured to represent different calibrations or configurations within the engine family and emission control system. Similar changes are made where appropriate in the heavy-duty procedures.

It is also appropriate to increase the flexibility of the evaporative emission-data vehicle selection process. To satisfy the evaporative emission-data requirement, a single "worst-case" evaporative configuration, from within each evaporative family/control system combination, must be selected from among the configurations represented by the exhaust emission-data selections for the engine family. This requirement will have been met if evaporative testing has already been completed on the worst-case configuration for the evaporative family as part of another engine family's testing. If an evaporative family or system is not represented by the exhaust selections and has not been previously tested, the reconfiguration and testing of a vehicle will be necessary to fulfill the proposed evaporative worst-case testing requirement. (Except for high altitude only evaporative families may demonstrate compliance by statement.)

These changes will decrease the test vehicle sample size by reducing the number of required test vehicles. However, since the remaining test vehicles should accurately reflect the worst-case emission performance of the manufacturer's product line, this change can be instituted without significant risk of noncompliance.

These changes greatly enhance the flexibilities allowed in the generation of emission data for use in the certification program. The benefit to the industry of these changes will be reduced cost due to the reduction in the number of required emission-data vehicles. These changes eliminate the emission-data selection based on sales and will allow the manufacturer to accumulate mileage on, and test a single vehicle for each engine family and satisfy any additional testing requirements for that engine family by reconfiguring and retesting that vehicle as long as only a single engine/emission control system combination is involved (the general case in the current certification program).

2. Allow mileage accumulation of less than 4,000 miles for emission-data vehicles:

Sections 86.082–26(a) (3) and (5) require manufacturers to test emission-data vehicles after accumulating 4,000 miles and to conduct that testing within a 250-mile tolerance. The 4,000-mile interval was established as a conservative minimum interval that would provide a certain assurance that all vehicles would be stabilized prior to testing. When this requirement was established the majority of vehicles were being operated on leaded fuel. Leaded fuel (which is no longer used by most light-duty vehicles) contributed substantially to combustion chamber deposits and a certain minimum of mileage accumulation was necessary to adequately account for the effects of these deposits.

In comments for the Selective Enforcement Audit rulemaking, the industry expressed its belief that a vehicle's emission performance stabilizes, in many cases, with significantly less mileage accumulation than 4,000 miles. Given the state of current control technology and the decreased use of leaded fuel, EPA believes that manufacturers are in the best position to determine when vehicles are stabilized.

This action changes the requirements to allow manufacturers to determine the appropriate mileage accumulation necessary prior to emission-data vehicle testing. The mileage interval will be established such that a vehicle's emisson performance has become stable and representative of design intent prior to testing. Sufficient mileage should be accumulated to reduce the possible effects of any emission variability that is the result of insufficient vehicle operation. Also the emission performance at the determined mileage should be such that the test results, after being adjusted by the appropriate deterioration factor, appropriately reflect the expected emission performance at 50,000 miles. In making this determination the behavior of the catalyst and its relation to accumulated mileage should be considered of primary importance. The same interval, once determined, will apply to all vehicles within an engine family. A manufacturer may continue to use the present 4,000-mile interval if it so desires. If a 4,900-mile interval is elected no stabilization determination is necessary. Once the mileage interval has been established for an engine family and emission-data vehicle testing has started, the interval

cannot be changed without the prior approval of the Administrator. Because stabilized vehicles are still required to be tested to demonstrate compliance, no increase in the risk of noncompliance is expected.

There is no restriction on the maximum amount of mileage that can be accumulated. It would generally be worse for emissions to accumulate more than 4,000 miles since the deterioration factor will continue to be calculated using the 4,000-mile interpolated value. A manufacturer could, however, bias the fuel economy data base by accumulating considerably more than 4,000 miles on its emission-data vehicles (fuel economy tends to increase with increased mileage). In order to prevent such biasing, if any emission-data vehicle accumulates more than 6,200 miles, its fuel economy results will be factored to compensate for the increased mileage. (For vehicles with between 4,000 and 6,200 miles, the increase is not sufficient to warrant the additional administrative burden of this factoring procedure.) This factoring applies only to those vehicles required by § 86.082–24. Vehicles that accumulate more than 10,000 miles prior to testing will not be considered acceptable for use in the Fuel Economy Program.

The benefit to the industry will be a more flexible, less time consuming, and less costly emission-data vehicle test program. The actual savings are dependent upon each manufacturer's vehicle/system stabilization characteristics and the manufacturer's ability to quantify these characteristics.

IV. Other Changes Considered

These regulatory revisions provide significant relief to the industry without significantly increasing the risk of vehicle noncompliance. More substantial changes might have required a notice of proposed rulemaking which could have delayed implementation of cost reductions. In that case, manufacturers would not be able to take full advantage of these cost savings for the 1983 model year.

Additional changes were considered but were rejected for various reasons. For example, eliminaton of specific evaporative emission testing requirements in favor of manufacturer self-certification was considered. A brief review of the 1981 and 1982 model year certification data base, however, uncovered a number of evaporative failures which resulted in evaporative system modifications. Therefore, it did not appear prudent to allow evaporative self-certification. The elimination of evaporative emission families was also considered but it was concluded that little or no cost savings would result and that some categorization of designs as is accomplished by establishing evaporative emission families would still be necessary for recordkeeping.

Another change considered was to routinely allow bench testing or artificial aging in the durability process. bench testing can be allowed currently, on a special case basis, to demonstrate equivalent or superior performance for carryover (OMSAPC Advisory Circular No. 17E, paragraph X) and also under the provisions of § 86.079–27 Special Test Procedures. Under a study contracted by EPA, the Agency did not obtain sufficient information from manufacturers to make specific rule change proposals.

EPA considered rule changes to use additive rather than the current multiplicative exhaust emission deterioration factors (d.f.'s) and, in conjunction with additive d.f.'s, allow the use of durability-data from vehicles which had interpolated values that exceeded the standard (linecrossed). EPA has not been able to determine, in general, that vehicle emission control performance deteriorates multiplicatively [1] as is currently assumed. Alternatively, the deterioration may be additive [2] in nature or some other function of mileage. Neither EPA nor the manufacturers have been able to show empirically that one type of d.f. is more appropriate than the other type for all motor vehicles or for any particular class of vehicles. Some groups of vehicles may be best characterized with an additive d.f. and other groups best characterized with a multiplicative d.f. However, the groups are not distinguishable by design, manufacturer, or other such parameters that would allow prediction of whether a particular design will be characteristically additive or multiplicative.

The multiplicative d.f. is extremely sensitive to variations of the deterioration rate at low emission levels. This problem has become more significant as the standards become more stringent (e.g., 0.41 gm/mi versus 1.5 gm/mi HC). For those groups of vehicles that deteriorate in an additive fashion, the use of multiplicative d.f. has penalized those manufacturers whose vehicles are calibrated at very low levels since the ratio of the 50,000-mile to 4,000-mile projections becomes greater at lower levels. The use of additive d.f.'s would eliminate this penalty.

The multiplicative d.f. encourages manufacturers to calibrate durability-data vehicles at high emission levels for those groups of vehicles that they believe deteriorate, at least in part, in an additive fashion. With a constant deterioration rate, the multiplicative d.f. decreases as the emission level increases. Since manufacturers may not know which groups of vehicles tend to deteriorate in an additive fashion, this encourages them to calibrate all of their durability-data vehicles as high as possible, often with calibrations purposely selected to be different than expected production calibrations. However, if the durability-data vehicle is calibrated so high that it linecrosses (the deterioration line exceeds the standard), it is no longer acceptable under the current regulations.

The combination of multiplicative d.f. and restriction against linecrossing has made it more difficult for manufacturers to complete the durability process as the emission standards have decreased. Manufacturers contend that, under statutory standards, a very narrow window of emission performance acceptability exists for durability-data vehicles. They have resorted to running backup durability-data vehicles in order to get one that results in a low enough d.f. and does not linecross. Domestic manufacturers are averaging five backup durability-data vehicles per family certified, at an estimated cost of $100,000 each or more. Rapid introduction of the new smaller models has apparently not left sufficient development time to fine tune durability-data vehicle calibrations so as to accurately predict 50,000-mile performance. Also, manufacturers may be cutting the calibration so close to the standards, in order to take maximum advantage of the effect on multiplicative d.f.'s, that slight vehicle and test variability could result in linecrossing.

If an additive d.f. were used and linecrossing were allowed, manufacturers would be able to substantially reduce the number of backup durability-data vehicles that they run. Manufacturers would probably continue to run some backup durability-data vehicles either as insurance against mechanical failure and vehicle collision or with less expensive alternative emission control systems.

However, by switching to an additive d.f. system, manufacturers could be allowed to increase the emissions of

[1] A vehicle that deteriorates multiplicatively will have higher *rates* of deterioration with higher initial emissions. That is, the slope of the fitted deterioration line increases with emission level.

[2] A vehicle that deteriorates additively always exhibits the same *rate* of deterioration no matter what the initial emission level. That is, the slope of the fitted deterioration line remains constant with emission level.

some vehicle designs due to the change in the mathematical methods of determining compliance. This is due to the removal of the multiplicative "penalty." EPA does not believe that the use of additive d.f.'s would reduce assurances that vehicles are designed to meet emission standards for 50,000 miles in actual use but it would allow some vehicles to be calibrated at higher emission levels and still be certified within the standards. EPA does not know to what extent this might occur. The Agency does not know if there are clear motives for manufacturers to pursue this strategy or if it is technically feasible to "fine tune" calibrations for these small changes. Considering these unknowns and the possibility that the change could result in the certification of some vehicles at slightly higher emission levels, EPA decided that this change should not be made without an opportunity for public comment. Accordingly, EPA requests comments on the technical appropriateness of the additive versus multiplicative d.f. calculation procedure and on the appropriateness of allowing linecrossing in the case of an additive d.f. Further, EPA requests comments on the likelihood and extent of higher emission level designs that could result from a change to an additive d.f. calculation procedure. EPA also requests comments on the extent to which changing to additive d.f.'s and allowing linecrossing would decrease the use of "backup" engine families. Based on these comments EPA may consider these changes in a future rulemaking.

V. Technical Amendments

In order to save the time and printing costs involved in publishing them under a separate notice, the following technical amendments are also included in this action:

1. Provisions of § 86.082–1 regarding the Alternative Durability Program are being reincorporated after they were inadvertently deleted in the high-altitude rulemaking.

2. Definitions are being consolidated and republished in alphabetical order in § 86.082–2.

3. A minor correction has been made in § 86.082–2 to the definition for "configuration;" the term "rear axle ratio" has been changed to "final drive ratio" to clearly apply to front-wheel drive vehicles.

4. Section 80.24 of the fuel regulations has been amended to define which vehicles must use unleaded fuel. Previously, these decisions were made on a case-by-case basis with the Administrator's decision set forth in the certificate of conformity. These decisions were based on the type of fuel used during emission certification; if unleaded fuel was used during certification then it would be required for production vehicles and engines. The regulations have been revised to explicitly set forth this criterion. In the future, manufacturers will determine if unleaded fuel is required.

5. Revisions have been made to regulations pertaining to the certificate of conformity language (§§ 86.082–30, 86.084–30, and 86.437–78). These regulations formerly required specific language to be contained on the certificate of conformity. This language would vary for different classes of vehicles, different engine types, and for other factors (for example, the Administrator's decision on the requirement for unleaded fuel as discussed above). Instead of requiring specific language on the certificate, the regulations have been amended to simply require a statement. This change will have no effect on the motor vehicle industry which is familiar with these requirements. It will permit EPA to reduce the cost of preparing and printing certificates, since uniform language will apply to all vehicles and engines. These changes are administrative in nature and do not affect the substantive requirements of the regulations.

6. Fuel specifications in §§ 86.113, 86.307, 86.513, and 86.1313 are amended to be consistent and to allow deviations with approval of the Administrator.

7. Provisions are being included in § 86.082–24 to indicate that heavy-duty engines certified for 1979 can be certified in subsequent model years without regard to test procedure. This statement was included in the rulemaking for the 1979 test procedure and was inadvertently deleted in a subsequent rulemaking.

8. Minor changes and clarifications have been made to the heavy-duty test procedures in Subpart D and Subpart I. These changes will reduce costs slightly by easing overly restrictive procedures; no change in the actual emission performance of heavy-duty engines will occur as a result. Provisions concerning gas specifications have been amended to specifically permit the use of gas blending devices as they are currently permitted for light-duty testing. An optional "quick-check" for the NO_x analyzer is permitted. The tolerance on calibrations is broadened for NDIR analyzers. Other specifications for water trap temperature measurement, analyzer gases, sample line temperature, and correction factors are relaxed somewhat. Measurement of fuel H/C ratios is optional; specified average values may be used if desired. Also, the hangup check at the end of an emission test can be performed with room air, in lieu of zero-grade air, at the manufacturer's option. The calibration interval for neutral density filters, used in diesel smoke tests, has been increased to one year for those filters in which the filter material is protected. Filters with exposed filter material must continue to be calibrated every six months. Under the revised regulation, manufacturers are not required to submit filters to EPA. Filter opacities must be confirmed against NBS (or equivalent) reference filters. EPA will continue to test opacity filters if requested.

9. Specifications for the heavy-duty gasoline engine test sequence (see § 86.340–79) have been amended to allow for fast idle speeds in excess of 2,000 rpm during engine warm-up. The time to check engine specifications has been increased to 20 minutes. The provisions for dealing with HC spikes, § 86.338–79(a)(6), now covers all modes rather than just idle and closed throttle.

10. Numerous sections of EPA's regulations, such as most of §§ 86.077, 86.078, 86.079, 86.080, and subparts H and J, apply to previous model years and have been superseded. These sections are being deleted from the Code of Federal Regulations as they are no longer of general interest. It should be noted that EPA is not revoking these regulations; they will still apply if a manufacturer seeks emission certification or fuel economy labels for vehicles manufactured during a previous model year. This rarely occurs and generally involves a very small number of vehicles.

11. Equations contained in §§ 86.110–82 and 86.145–82 have been changed to correct inadvertent errors contained in the original publication.

VI. Stringency

These amendments are administrative and procedural in nature, and will not affect the stringency of the emission standards. The technology necessary to meet the statutory emission standards has been developed and proven during previous certification years. The manufacturers have demonstrated the ability to satisfactorily conduct on their own many facets of the certification program under the Abbreviated Certification Review procedure which was established beginning with the 1980 model year. Manufacturers are expected to continue to conduct responsible certification programs under the revised certification procedures set forth in this rulemaking. EPA will continue to monitor manufacturers' compliance with

the certification procedures and emission standards through confirmatory emission testing, auditing of the manufacturers' certification programs, Selective Enforcement Audits, and recall.

VII. Certification Cost Reductions

It is extremely difficult to accurately estimate the cost savings that will result from these changes since the extent to which manufacturers will take advantage of each change is not known. Given this limitation, EPA's best estimate of the cost reduction resulting from these changes is between 5 million and 30 million dollars per year. In addition, we estimate these changes could reduce the reporting burden on the industry by as much as 35,000 person hours per year. Following the implementation of these changes and the stabilization of emission standards EPA estimates that the total cost to the industry of the certification program will be approximately 50 million dollars depending on the extent to which manufacturers continue to bring new engine designs into production.

VIII. Public Participation

The Agency finds that good cause exists for omitting as unnecessary and contrary to the public interest a notice of proposed rulemaking. This finding is based on the facts that (1) the action reduces the economic burden of the emission regulations on the regulated industry, (2) no adverse environmental impacts are anticipated, (3) the changes do not affect the stringency of the applicable emission standards, or the manufacturers' obligation to comply with these standards, (4) many of these changes adopt provisions already the subject of public comment in the rulemaking on certification for small-volume manufacturers, and (5) immediate implementation of the program will permit it to be utilized for certification for the remainder of the 1982 model year. This will give manufacturers and EPA an opportunity to derive some cost savings at the earliest possible time.

In addition, EPA finds that good cause exists for making these regulations effective on promulgation rather than 30 days after promulgation. This finding is based on the facts that (1) the industry has already started its 1983 certification program and delaying the effective date by 30 days would cause manufacturers to either forgo some of the advantages of the rule change or delay their certification programs until after the effective date, (2) this action relaxes the restrictions and reduces the economic burden of the existing regulations on the regulated industry, and (3) this action does not change the industry's obligation to comply with the emissions standards.

EPA will, however, consider comments on this rule received within 30 days after publication of this notice. Please submit written comments to: U.S. Environmental Protection Agency, Central Docket Section (A–130), Attn: Docket No. A–81–27, Waterside Mall, West Tower Lobby, Gallery I, 401 M Street, SW., Washington, D.C. 20460. The docket may be inspected between the hours of 8:00 a.m. and 4:00 p.m. Monday through Friday. A reasonable fee may be charged for copying service. If, as a result of those comments, additional changes to the regulations are appropriate, EPA will consider additional rule changes.

IX. Regulatory Analysis

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Analysis. This regulation is not major because it will result in an annual effect on the economy of less than $100 million. The total cost reduction provided to manufacturers is estimated to be less than $30 million per year as a result of this action. Also, this regulation should not result in increased costs or prices for consumers, industries, or others, nor should it have adverse effects on competition, employment, investment, or productivity.

X. Regulatory Flexibility Act

Under the regulatory Flexibility Act, 5 U.S.C. 601 et seq., EPA is required to determine whether a regulation will have a significant economic impact on a substantial number of small entities so as to require a regulatory analysis. The certification procedures established by this rulemaking should reduce the burdens, including costs, of compliance with certification requirements for all manufacturers. Many of the certification cost reductions provided by this action were already available to small-volume manufacturers (less than 10,000 projected sales) under a previous regulation. The optional certification procedures published in the Federal Register on March 12, 1981 (46 FR 16259) provided these cost reductions to small-volume manufacturers. The result is that few small entities will be affected by this regulation. Therefore, pursuant to 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities.

Dated: October 2, 1981.

Anne M. Gorsuch,

Administrator.

For the reasons set forth in the preamble, EPA amends 40 CFR Part 80, Part 86, and Part 600 as follows:

PART 80—REGULATION OF FUELS AND FUEL ADDITIVES

1. The authority citation for Part 80 reads as follows:

Authority: Sections 211 and 301(a) of the Clean Air Act as amended, 42 U.S.C. 7545 and 7601.

2. A new paragraph (c) is added to § 80.24 and reads as follows:

§ 80.24 Controls applicable to motor vehicle manufacturers.

* * * * *

(c) For purposes of this section a motor vehicle shall be deemed to be equipped with an emission control device which will be significantly impaired by the use of leaded gasoline if unleaded gasoline was used in any testing or service accumulation under Part 86 relating to the emission certification of said motor vehicles or engine installed therein.

* * * * *

3. The table of contents of Part 86 is revised to read as follows:

PART 86—CONTROL OF AIR POLLUTION FROM NEW MOTOR VEHICLES AND NEW MOTOR VEHICLE ENGINES: CERTIFICATION AND TEST PROCEDURES

Subpart A—General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, 1977 and Later Model Year New Light-Duty Trucks, and for 1977 and Later Model Year New Heavy-Duty Engines

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86.078–3 Abbreviations.
86.078–4 Section numbering; construction.
86.078–6 Hearings on certification.
86.078–7 Maintenance of records; submittal of information; right of entry.
86.079–20 Incomplete vehicles, classification.
86.079–27 Special test procedures.
86.079–31 Separate certification.
86.079–32 Addition of a vehicle or engine after certification.
86.079–33 Changes to a vehicle or engine covered by certification.
86.079–34 Alternative procedure for notification of additions and changes.
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86.080–10 Emission standards for 1980 gasoline-fueled heavy-duty engines.
86.080–11 Emission standards for 1980 diesel heavy-duty engines.
86.080–12 Alternative certification procedures.

Sec.
86.081–5 General standards; increase in emissions; unsafe conditions.
86.081–9 Emission standards for 1981 light-duty trucks.
86.081–13 Alternative durability program.
86.081–29 Testing by the Administrator.
86.082–1 General applicability.
86.082–2 Definitions.
86.082–8 Emission standards for 1982 and later model year light-duty vehicles.
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86.082–14 Small-volume manufacturers certification procedures.
86.082–21 Application for certification.
86.082–22 Approval of application for certification; test fleet selections.
86.082–23 Required data.
86.082–24 Test vehicles and engines.
86.082–25 Maintenance.
86.082–26 Mileage and service accumulation; emission measurements.
86.082–27 Special test procedures; ref. § 86.79–27.
86.082–28 Compliance with emission standards.
86.082–30 Certification.
86.082–34 Alternative procedure for notification of additions and changes.
86.082–35 Labeling.
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86.083–9 Emission standards for 1983 and later model year light-duty trucks.
86.084–2 Definitions.
86.084–4 Section numbering; construction.
86.084–5 General standards; increase in emissions; unsafe conditions.
86.084–9 Emission standards for 1984 light-duty trucks.
86.084–10 Emission standards for 1984 and later model year gasoline-fueled heavy-duty engines.
86.084–11 Emission standards for 1984 diesel heavy-duty engines.
86.084–21 Application for certification.
86.084–22 Approval of application for certification.
86.084–23 Required data.
86.084–24 Test vehicles and engines.
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86.084–26 Mileage and service accumulation; emission measurements.
86.084–27 Special test procedure.
86.084–28 Compliance with emission standards.
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86.084–35 Labeling.
86.084–38 Maintenance instructions.
86.084–39 Automatic expiration of reporting and recordkeeping requirements.
86.085–8 Emission standards for 1985 light-duty vehicles.
86.085–9 Emission standards for 1985 light-duty trucks.
86.085–11 Emission standards for 1985 and later model year diesel heavy-duty engines.
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Subpart B—Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles and New Light-Duty Trucks; Test Procedures

86.101 General applicability.
86.102 Definitions.
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86.106–78 Equipment required; overview.
86.106–82 Equipment required; overview.
86.107–78 Sampling and analytical system; evaporative emissions.
86.108–79 Dynamometer.
86.109–78 Exhaust gas sampling system.
86.109–82 Exhaust gas sampling system; gasoline-fueled vehicles.
86.110–78 [Reserved]
86.110–82 Exhaust gas sampling system; diesel vehicles.
86.111–78 Exhaust gas analytical system.
86.111–82 Exhaust gas analytical system.
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86.115–78 EPA urban dynamometer driving schedule.
86.116–78 Calibrations; frequency and overview.
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4. The authority citation for Part 86 reads as follows:

Authority: Sections 202, 206, and 301(a)(1) of the Clean Air Act as amended, 42 U.S.C. 7521, 7524, and 7601(a)(1).

5. Section 86.082–1 is amended by adding paragraphs (c), (d), and (e) to read as follows:

§ 86.082–1 General applicability.

* * * * *

(c) *High-altitude certification.* The provisions of this subpart applicable to light-duty vehicles and light-duty trucks sold for principal use at designated high-altitude locations shall apply only during the 1982 and 1983 model years.

(d) *Alternative Durability Program.* For 1981 through 1984 model year light-duty vehicles and light-duty trucks, a manufacturer may elect to participate in the Alternative Durability Program. This optional program provides an alternative method of determining exhaust emission control system durability. The general procedures and a description of the program are contained in § 86.081–13 and specific provisions on test vehicles and compliance procedures are contained in § 86.082–24 and § 86.082–28 respectively.

(e) *Small-volume manufacturers.* Special certification procedures are available for any manufacturer whose projected combined U.S. sales of light-duty vehicles, light-duty trucks, and heavy-duty engines in its product line is fewer than 10,000 units for the model year in which the manufacturer seeks certification. In order to certify its product line under these optional procedures, the small-volume manufacturer must first obtain the Administrator's approval. Vehicles produced at facilities leased, operated, controlled, supervised, or in ten percent or greater part owned by the manufacturer shall be counted in calculating the total sales of the manufacturer. The small-volume manufacturer's certification procedures are described in § 86.082–14.

6. Section 86.082–2 is revised to read as follows:

§ 86.082–2 Definitions.

(a) The definitions of this section apply to this subpart and also to subparts B, D, and I of this part.

(b) As used in this subpart, all terms not defined herein shall have the meaning given them in the Act:

"Accuracy" means the difference between a measurement and true value.

"Act" means Part A of Title II of the Clean Air Act, 42 U.S.C. as amended, 7521, *et seq.*

"Administrator" means the Administrator of the Environmental Protection Agency or his authorized representative.

"Auxiliary Emission Control Device (AECD)" means any element of design which senses temperature, vehicle speed, engine RPM, transmission gear, manifold vaccum, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

"Basic engine" means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator.

"Basic vehicle frontal area" means the area enclosed by the geometric projection of the basic vehicle along the longitudinal axis, which includes tires but excludes mirrors and air deflectors, onto a plane perpendicular to the longitudinal axis of the vehicle.

"Body style" means a level of commonality in vehicle construction as defined by number of doors and roof treatment (e.g., sedan, convertible, fastback, hatchback).

"Body type" means a name denoting a group of vehicles that are either in the same car line or in different car lines provided the only reason the vehicles

qualify to be considered in different car lines is that they are produced by a separate division of a single manufacturer.

"Calibrating gas" means a gas of know concentration which is used to establish the response curve of an analyzer.

"Calibration" means the set of specifications, including tolerances, unique to a particular design, version, or application of a component or components assembly capable of functionally describing its operation over its working range.

"Car line" means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics as roofline, number of doors, seats, or windows except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different car lines than passenger cars.

"Configuration" means a subclassification of an engine-system combination on the basis of engine code, inertia weight class, transmission type and gear ratios, final drive ratio, and other parameters which may be designated by the Administrator.

"Crankcase emissions" means airborne substances emitted to the atmosphere from any portion of the engine crankcase ventilation or lubrication systems.

"Curb-idle" for manual transmission code heavy-duty engines means the manufacturer's recommended engine speed with the transmission in neutral or with the clutch disengaged. For automatic transmission code heavy-duty engines, curb-idle means the manufacturer's recommended engine speed with the automatic transmission in gear and the output shaft stalled.

"Defeat Device" means an AECD that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal urban vehicle operation and use, unless (1) such conditions are substantially included in the Federal emission test procedure, (2) the need for the AECD is justified in terms of protecting the vehicle against damage or accident, or (3) the AECD does not go beyond the requirements of engine starting.

"Diurnal breathing losses" means evaporative emissions as a result of the daily range in temperature.

"Drive train configuration" means a unique combination of engine code, transmission configuration, and axle ratio.

"Dynamometer-idle" for automatic transmission code heavy-duty engines means the manufacturer's recommended engine speed without a transmission that simulates the recommended engine speed with a transmission and with the transmission in neutral.

"Engine code" means a unique combination, within an engine-system combination, of displacement, carburetor (or fuel injection) calibration, choke calibration, distributor calibration, auxiliary emisison control devices, and other engine and emission control system components specified by the Administrator.

"Engine family" means the basic classification unit of a manufacturer's product line used for the purpose of test fleet selection and determined in accordance with § 86.082–24.

"Engine family group" means a combination of engine families for the purpose of determining a minimum deterioration factor under the Alternative Durability Program.

"Engine-system combination" means an engine family-exhaust emission control system combination.

"EPA Enforcement Officer" means any officer of employee of the Environmental Protection Agency so designated in writing by the Administrator (or by his designee).

"Evaporative emission code" means a unique combination, in an evaporative emission family-evaporative emission control system combination, of purge system calibrations, fuel tank and carburetor bowl veht calibrations and other fuel system and evaporative emission control system components and calibrations specified by the Administrator.

"Evaporative emissions" means hydrocarbons emitted into the atmosphere from a motor vehicle, other than exhaust and crankcase emissions.

"Evaporative vehicle configuration" means a unique combination of basic engine, engine code, body type, and evaporative emission code.

"Exhaust emissions" means substances emitted to the atmosphere from any opening downstream from the exhaust port of a motor vehicle engine.

"Fuel evaporative emissions" means vaporized fuel emitted into the atmosphere from the fuel system of a motor vehicle.

"Fuel system" means the combination of fuel tank(s), fuel pump, fuel lines, and carburetor or fuel injection components, and includes all fuel system vents and fuel evaporative emission control system components.

"Gross vehicle weight" means the manufacturer's gross weight rating for the individual vehicle.

"Gross vehicle weight rating (GVWR)" means the value specified by the manufacturer as the maximum design loaded weight of a single vehicle.

"Hang-up" refers to the process of hydrocarbon molecules being adsorbed, condensed, or by any other method removed from the sample flow prior to reaching the instrument detector. It also refers to any subsequent desorption of the molecules into the sample flow when they are assumed to be absent.

"Heavy-duty engine" means any engine which the engine manufacturer could reasonably expect to be used for motive power in a heavy-duty vehicle.

"Heavy-duty vehicle" means any motor vehicle rated at more than 8,500 pounds GVWR or that has a vehicle curb weight of more than 6,000 pounds or that has a basic vehicle frontal area in excess of 45 square feet.

"High altitude" means any elevation over 1,219 meters (4,000 feet).

"High-altitude conditions" means a test altitude of 1,620 meters (5,315 feet), plus or minus 100 meters (328 feet), or equivalent observed barometric test conditions of 83.3 ± 1 kilopascals.

"High-altitude reference point" means an elevation of 1,620 meters (5,315 feet) plus or minus 100 meters (328 feet), or equivalent observed barometric test conditions of 83.3 kPa (24.2 inches Hg), plus or minus 1 kPa (0.30 Hg).

"Hot-soak losses" means evaporative emissions after termination of engine operation.

"Incomplete truck" means any truck which does not have the primary load carrying device or container attached.

"Inertia weight class" means the class, which is a group of test weights, into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of Part 86.

"Intermediate speed" means peak torque speed if peak torque speed occurs between 60 and 75 percent of rated speed. If the peak torque speed is less than 60 percent of rated speed, intermediate speed means 60 percent of rated speed. If the peak torque speed is greater than 75 percent of rated speed, intermediate speed means 75 percent of rated speed.

"Light-duty truck" means any motor vehicle rated at 8,500 pounds GVWR or less which as a vehicle curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of 45 square feet or less, which is:

(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or

(2) Designed primarily for transportation of persons and has a capacity of more than 12 persons, or

(3) Available with special features enabling off-street or off-highway operation and use.

"Light-duty vehicle" means a passenger car or passenger car derivative capable of seating 12 passengers or less.

"Loaded vehicle weight" means the vehicle curb weight plus 300 pounds.

"Low altitude" means any elevation equal to or less than 1,219 meters (4,000 feet).

"Low altitude conditions" means a test altitude less than 549 meters (1,800 feet).

"Malfunction" means not operating according to specifications (e.g., those specifications listed in the application for certification).

"Maximum rated horsepower" means the maximum brake horsepower output of an engine as stated by the manufacturer in his sales and service literature and his application for certification under § 86.082–21.

"Maximum rated torque" means the maximum torque produced by an engine as stated by the manufacturer in his sales and service literature and his application for certification under § 86.082–21.

"Military engine" means any engine manufactured solely for the Department of Defense to meet military specifications.

"Model" means a specific combination of car line, body style, and drivetrain configuration.

"Model type" means a unique combination of car line, basic engine, and transmission class.

"Model year" means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year. *Provided,* That if the manufacturer has no annual production period, the term "model year" shall mean the calendar year.

"Nominal fuel tank capacity" means the volume of the fuel tank(s), specified by the manufacturer to the nearest tenth of a U.S. gallon, which may be filled with fuel from the fuel tank filler inlet.

"Opacity" means the fraction of a beam of light, expressed in percent, which fails to penetrate a plume of smoke.

"Option" means any available equipment or feature not standard equipment on a model.

"Oxides of nitrogen" means the sum of the nitric oxide and nitrogen dioxide contained in a gas sample as if the nitric oxide were in the form of nitrogen dioxide.

"Peak torque speed" means the speed at which an engine develops maximum torque.

"Percent load" means the fraction of the maximum available torque at a specified engine speed.

"Precision" means the standard deviation of replicated measurements.

"Rated speed" means the speed at which the manufacturer specifies the maximum rated horsepower of an engine.

"Reconfigured emission-data vehicle" means an emission-data vehicle obtained by modifying a previously used emission-data vehicle to represent another emission-data vehicle.

"Running loss" means fuel evaporative emissions resulting from an average trip in an urban area or the simulation of such a trip.

"Scheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed on a periodic basis to prevent part failure or vehicle (if the engine were installed in a vehicle) malfunction.

"Smoke" means the matter in the exhaust emission which obscures the transmission of light.

"Span gas" means a gas of known concentration which is used routinely to set the output level of an analyzer.

"Standard equipment" means those features or equipment which are marketed on a vehicle over which the purchaser can exercise no choice.

"System" includes any motor vehicle engine modification which controls or causes the reduction of substances emitted from motor vehicles.

"Tank fuel volume" means the volume of fuel in the fuel tank(s), which is determined by taking the manufacturer's nominal fuel tank(s) capacity and multiplying by 0.40, the result being rounded using ASTM E 29–67 to the nearest tenth of a U.S. gallon.

"Test weight" means the weight, within an inertia weight class, which is used in the dynamometer testing of a vehicle, and which is based on its loaded vehicle weight in accordance with the provisions of Part 86.

"Throttle" means the mechanical linkage which either directly or indirectly controls the fuel flow to the engine.

"Transmission class" means the basic type of transmission, e.g., manual, automatic, semiautomatic.

"Transmission configuration" means a unique combination, within a transmission class, of the number of the forward gears and, if applicable, overdrive. The Administrator may further subdivide a transmission configuration (based on such criteria as gear ratios, torque convertor multiplication ratio, stall speed and shift calibration, etc.), if he determines that significant fuel economy or exhaust emission differences exist within that transmission configuration.

"Unscheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed to correct a part failure or vehicle (if the engine were installed in a vehicle) malfunction.

"Useful life" means:

(1) For light-duty vehicles and light-duty trucks a period of use of 5 years or 50,000 miles, whichever first occurs.

(2) For gasoline-fueled heavy-duty engines a period of use of 5 years or 50,000 miles of vehicle operation or 1,500 hours of engine operation (or an equivalent period of 1,500 hours of dynamometer operation), whichever first occurs.

(3) For diesel heavy-duty engines a period of use of 5 years or 100,000 miles of vehicle operation or 3,000 hours of engine operation (or an equivalent period of 1,000 hours of dynamometer operation), whichever first occurs.

"Van" means a light-duty truck having an integral enclosure, fully enclosing the driver compartment and load carrying device, and having no body sections protruding more than 30 inches ahead of the leading edge of the windshield.

"Vehicle configuration" means a unique combination of basic engine, engine code, inertia weight class, transmission configuration, and axle ratio.

"Vehicle curb weight" means the actual or the manufacturer's estimated weight of the vehicle in operational status with all standard equipment, and weight of fuel at nominal tank capacity, and the weight of optional equipment computed in accordance with § 86.082–24; incomplete light-duty trucks shall have the curb weight specified by the manufacturer.

"Zero (0) hours" means that point after normal assembly line operations and adjustments are completed and before six (6) additional operating hours have been accumulated, including emission testing, if performed.

"Zero (0) miles" means that point after initial engine starting (not to exceed 100 miles of vehicle operation, or three hours of engine operation) at which normal assembly line operations and adjustments are completed, and including emission testing, if performed.

7. A new § 86.082–23, which is identical to § 86.079–23 except for revisions to paragraphs (c)(1)(i), (c)(1)(ii), and (c)(2) and deletion of

paragraphs (a)(1) and (a)(2), is added to read as follows:

§ 86.082–23 Required data.

(a) The manufacturer shall perform the tests required by the applicable test procedures, and submit to the Administrator the following information: *Provided, however,* That if requested by the manufacturer, the Administrator may waive any requirement of this section for testing of vehicles (or engines) for which emission data are available, or will be made available, under the provisions of §86.081–29.

(b)(1) Exhaust emission durability data on such vehicles (or engines) tested in accordance with applicable test procedures and in such numbers as specified, which will show the performance of the systems installed on or incorporated in the vehicle (or engine) for extended mileage (or extended operation), as well as a record of all pertinent maintenance (all maintenance and servicing for heavy-duty engines) performed on the test vehicles (or test engines). Records of maintenance and servicing of heavy-duty engines performed prior to the zero-hour point do not need to be submitted but must be maintained.

(2) Evaporative emission deterioration factors for each evaporative emission family-evaporative emission control system combination and all test data that are derived from testing described under § 86.082–21(b)(4)(iii) designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under § 86.082–30 will meet the evaporative emission standards in § 86.082–8 or § 86.082–9, as appropriate, for the useful life of the vehicle.

(c) Emission-data:

(1) *Certification vehicles.* (i) Emission data on such vehicles tested in accordance with applicable test procedures and in such numbers as specified. These data shall include zero-mile data, if generated, and emission data generated for certification as required under § 86.082–26(a)(3)(i) or § 86.082–26(a)(3)(ii).

(ii) Emission data on those vehicles selected under §§ 86.082–24(b)(1)(v) and 86.082–23(b)(1)(viii) and tested in accordance with the applicable test procedures of this subpart and in such numbers as specified, which are tested under high-altitude conditions after the vehicles emissions performance has stabilized. These data shall include zero mile data, if generated.

(2) *Certification engines.* Emission data on such engines tested in accordance with applicable emission test procedures, of this subpart and in such numbers as specified. These data shall include zero-hour data, if generated, and emission data generated for certification as required under § 86.082–26(b)(5).

(d) A statement that the vehicles (or engines) for which certification is requested conform to the requirements in § 86.081–5(b), and that the descriptions of tests performed to ascertain compliance with the general standards in § 86.081–5(b), and the data derived from such tests, are available to the Administrator upon request.

(e)(1) A statement that the test vehicles (or test engines) with respect to which data are submitted to demonstrate compliance with §§ 86.082–8, 86–082–9, 86–082–10, 86–082–11, as applicable, are in all material respects as described in the manufacturer's application for certification, have been tested in accordance with the applicable test procedures utilizing the fuels and equipment described in the application for certification and that on the basis of such tests, the vehicles (or engines) conform to the requirements of this part. If such statements cannot be made with respect to any vehicle (or engine) tested, the vehicle (or engine) shall be identified, and all pertinent data relating thereto shall be supplied to the Administrator. If, on the basis of the data supplied and any additional data as required by the Administrator, the Administrator determines that the test vehicle (or test engine) was not as described in the application for certification or was not tested in accordance with the applicable test procedures utilizing the fuels and equipment as described in the application for certification, the Administrator may make the determination that the vehicle (or engine) does not meet the applicable standards. The provisions of § 86.083–30(b) shall then be followed.

(2) For evaporative emission durability, the statement of compliance with paragraph (b)(2) of this section.

8. Section 86.082–24 is amended by revising paragraphs (a)(2), (a)(4), (a)(8), (a)(9), (a)(10), (b)(1)(i), (b)(1)(ii), (b)(1)(iii), (b)(1) (iv), (b)(1)(vii)(A), (b)(1)(vii)(B), (b)(1)(vii)(C), (b)(2)(iii), and (g)(3), adding paragraphs (a)(11), (b)(2)(iii)(A), (b)(2)(iii)(B), (b)(2)(v), (e)(1), (e)(2), (f)(1), (f)(2), (g)(3)(i), and (g)(3)(ii), and reserving paragraph (b)(2)(ii) to read as follows:

§ 86.082–24 Test vehicles and engines.

(a)(1) * * *

(2) To be classed in the same engine family, engines must be identical in all the following respects:

(i) The cylinder bore center-to-center dimensions.

(ii) [Reserved]

(iii) [Reserved]

(iv) The cylinder block configuration (air cooled or water cooled: L–6, 90°, V–8, etc.).

(v) The location of the intake and exhaust valves (or ports), and the valve (or port) sizes (within a ⅛–inch range on the valve head diameter or within 10 percent of the port area.)

(vi) The method of air aspiration.

(vii) The combustion cycle.

(viii) Catalytic converter characteristics.

(ix) Thermal reactor characteristics.

(x) Type of air inlet cooler (e.g., intercoolers and aftercoolers) for diesel heavy-duty engines.

* * * * *

(4) Where engines are of a type which cannot be divided into engine families based upon the criteria listed in paragraphs (a)(2) and (a)(3) of this section, the Administrator will establish families for those engines based upon those features most related to their emission characteristics. Engines that are eligible to be included in the same engine family based on the criteria in paragraphs (a)(2) and (a)(3)(i) of this section may be further divided into different engine families if the manufacturer determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the following features of each engine:

(i) The dimension from the center line of the crankshaft to the center line of the camshaft.

(ii) The dimension from the center line of the crankshaft to the top of the cylinder block head face.

* * * * *

(7) * * *

(8)(i) If the manufacturer elects to participate in the Alternative Durability Program, the engine families covered by an application for certification shall be grouped based upon similar engine design and emission control system characteristics. Each of these groups shall constitute a separate engine family group.

(ii) To be classed in the same engine family group, engine families must contain engines identical in all of the following respects:

(A) The combustion cycle.

(B) The cylinder block configuration (air-cooled or water-cooled; L–6, V–8, rotary, etc.).

(C) Displacement (engines of different displacement with 50 cubic inches or 15 percent of the largest displacement and

contained within a multidisplacement engine family will be included in the same engine family group).

(D) Catalytic converter usage and basic type (non-catalyst, oxidation catalyst only, three-way catalyst equipped).

(9) Engine families identical in all respects listed in paragraph (a)(8) of this section may be further divided into different engine family groups if the Administrator determines that they are expected to have significantly different exhaust emission control system deterioration characteristics.

(10) A manufacturer may request the Administrator to include in an engine family group, engine families in addition to those grouped under the provisions of paragraph (a)(8) of this section. This request must be accompanied by information the manufacturer believes supports the inclusion of these additional engine families.

(11) A manufacturer may combine into a single engine family group those light-duty vehicle and light-duty truck engine families which otherwise meet the requirements of paragraphs (a)(8) through (a)(10) of this section.

(b) * * *

(1) * * *

(i) Vehicles will be chosen to be operated and tested for emission data based upon engine family groupings. Within each engine family, one test vehicle will be selected based on the following criteria: The Administrator shall select the vehicle with the heaviest equivalent test weight (including options) within the family. Then within that vehicle the Administrator shall select, in the order listed, the highest road load power, largest displacement, highest fuel flow at the speed of maximum rated torque, the transmission with the highest numerical final gear ratio (including overdrive), and the highest numerical axle ratio offered in that engine family.

(ii) The Administrator shall select one additional test vehicle from within each engine family. The vehicle selected shall be the vehicle expected to exhibit the highest emissions of those vehicles remaining in the engine family. If all vehicles within the engine family are similar the Administrator may waive the requirements of this paragraph.

(iii) Within an engine family and exhaust emission control system, the manufacturer may alter any emission-data vehicle to represent more than one selection under paragraph (b)(1) (i), (ii), (iv), or (vii) of this section.

(iv) If the vehicles selected in accordance with paragraphs (b)(1) (i) and (ii) of this section do not represent each engine-system combination, then one vehicle of each engine-system combination not represented will be selected by the Administrator. The vehicle selected shall be the vehicle expected to exhibit the highest emissions of those vehicles within the engine family.

* * * * *

(vii)(A) Vehicles of each evaporative emission family will be divided into evaporative emission control systems.

(B) The Administrator will select the vehicle expected to exhibit the highest evaporative emissions, from within each evaporative family to be certified, from among the vehicles represented by the exhaust emission-data selections for the engine family, unless evaporative testing has already been completed on the vehicle expected to exhibit the highest evaporative emissions for the evaporative family as part of another engine family's testing.

(C) If the vehicles selected in accordance with paragraph (b)(1)(vii)(B) of this section do not represent each evaporative emission control system, the Administrator will select the vehicle with the highest expected evaporative emissions from within each unrepresented evaporative system.

* * * * *

(2) * * *

(i) * * *

(ii) [Reserved]

(iii) The Administrator shall select a maximum of two engines within each engine family based upon features indicating that they may have the highest emission levels of the engines in that engine family as follows:

(A) The Administrator shall select one emission-data engine first based on the largest displacement within the engine family. Then within the largest displacement the Administrator shall select, in the order listed, highest fuel flow at the speed of maximum rated torque, the engine with the most advanced spark timing, no EGR or lowest EGR flow, and no air pump or lowest actual flow air pump.

(B) The Administrator shall select one additional engine, from within each engine family. The engine selected shall be the engine expected to exhibit the highest emissions of those engines remaining in the engine family. If all engines within the engine family are similar the Administrator may waive the requirements of this paragraph.

(iv) * * *

(v) Within an engine family and emission control system, the manufacturer may alter any emission-data engine to represent more than one selection under paragraphs (b)(2) (iii) and (iv) of this section.

* * * * *

(e)(1) Any manufacturer whose projected sales for the model year in which certification is sought is less than:

(i) 2,000 gasoline-fueled light-duty vehicles, or

(ii) 2,000 diesel light-duty vehicles, or

(iii) 2,000 gasoline-fueled light-duty trucks, or

(iv) 2,000 diesel light-duty trucks, or

(v) 2,000 gasoline-fueled heavy-duty engines, or

(vi) 2,000 diesel heavy-duty engines, may request a reduction in the number of test vehicles (or engines) determined in accordance with the foregoing provisions of this section. The Administrator may agree to such lesser number as he determines would meet the objectives of this procedure.

(2) Any manufacturer may request to certify engine families with combined total sales of fewer than 10,000 light-duty vehicles, light-duty trucks, and heavy-duty engines utilizing assigned deterioration factors prescribed by the Administrator. The assigned deterioration factors shall be applied only to entire engine families.

(f)(1) In lieu of testing an emission-data or durability-data vehicle (or engine) selected under paragraph (b) or (c) of this section, and submitting data therefor, a manufacturer may, with the prior written approval of the Administrator, submit exhaust emission data and/or fuel evaporative emission data, as applicable, on a similar vehicle (or engine) for which certification has previously been obtained or for which all applicable data required under § 86.082–23 have previously been submitted.

(2) Heavy-duty engine test data submitted prior to the 1980 model year and which comply with paragraph (f)(1) of this section can be used in subsequent model years, without regard to the test procedure. Any heavy-duty engine certified in the 1979 model year will be certified for 1980 and subsequent model years if requested by the manufacturer.

(g) * * *

(3)(i) Where it is expected that more than 33 percent of a car line, within an engine-system combination, will be equipped with an item of optional equipment that can reasonably be expected to influence emissions, then such items shall actually be installed (unless excluded under paragraph (g)(3)(ii) of this section) on all emission-data and durability-data vehicles of that car line, within that engine-system combination, on which the items are

intended to be offered in production. Optional equipment that can reasonably be expected to influence emissions are the air conditioner, power steering, power brakes and other items determined by the Administrator.

(ii) If the manufacturer determines by test data or engineering evaluation that the actual installation of the optional equipment required by paragraph (g)(3)(i) of this section does not affect the emissions or fuel economy values, the optional equipment need not be installed on the test vehicle. The weight of the options shall be included in the design curb weight and also be represented in the weight of the test vehicles. The engineering evaluation, including any test data, used to support the deletion of optional equipment from test vehicles, shall be maintained by the manufacturer and shall be made available to the Administrator upon request.

* * * * *

9. A new § 86.082–25, which is identical to § 86.079–25 except for revisions to paragraphs (a)(1) and (a)(10), is added to read as follows:

§ 86.082–25 Maintenance.

(a) *Light-duty vehicles and light-duty trucks.* Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(1) Scheduled maintenance on the engine, emission control system, and fuel system of durability-data vehicles, selected by the Administrator or elected by the manufacturer under § 86.082–24(c)(1), shall be scheduled for performance during durability testing at the same mileage intervals that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the motor vehicle. This maintenance schedule may be updated as necessary throughout the durability-data vehicle's testing provided that no maintenance operation is deleted from the maintenance schedule after the operation has been performed on the test vehicle. Such maintenance shall be performed, except as provided in paragraph (a)(5)(iii) of this section, only under the following provisions:

(i) Scheduled major engine tuneups to manufacturer's specifications may be performed no more frequently than every 12,500 miles of scheduled driving: *Provided*, That no tuneup may be performed after 45,000 miles of scheduled driving. A scheduled major engine tuneup shall be restricted to paragraph (a)(1)(i) (A) or (B) of this section, and shall be conducted in a manner consistent with service instructions and specifications provided by the manufacturer for use by customer service personnel.

(A) *For gasoline-fueled vehicles,* the following items may be inspected, replaced, cleaned, adjusted, and/or serviced as required:

(*1*) Ignition system.

(*2*) Cold starting enrichment system (includes fast idle speed setting).

(*3*) Curb idle speed and air/fuel mixture.

(*4*) Drive belt tension on engine accessories.

(*5*) Valve lash.

(*6*) Inlet air and exhaust gas control valves.

(*7*) Engine bolt torque.

(*8*) Spark plugs.

(*9*) Fuel filter and air filter.

(*10*) Crankcase emission control system.

(*11*) Fuel evaporative emission control system.

(B) *For diesel vehicles,* a major engine tuneup shall be restricted to the following:

(*1*) Adjust low idle speed.

(*2*) Adjust valve lash if required.

(*3*) Adjust injector timing.

(*4*) Adjust governor.

(*5*) Clean and service injector tips.

(*6*) Adjust drive belt tension on engine accessories.

(*7*) Check engine bolt torque and tighten as required.

(ii) Change of engine and transmission oil, and change or service of oil filter will be allowed at the same mileage intervals that will be specified in the manufacturer's maintenance instructions.

(iii) Readjustment of the engine idle speed (curb idle and fast idle) may be performed, in addition to adjustment during scheduled major engine tuneups, once during the first 5,000 miles of vehicle operation.

(2)(i) *For gasoline-fueled vehicles,* unscheduled maintenance on the engine, emission control system, and fuel system of durability-data vehicles may be performed, except as provided in paragraph (a)(5)(i) of this section, only under the following provisions:

(A) Any persistently misfiring spark plug may be replaced, in addition to replacement at scheduled major engine tuneup points.

(B) Readjustment of the engine cold starting enrichment system may be performed if there is a problem of stalling or if there is visible black smoke.

(C) Readjustment of the engine idle speed (curb idle and fast idle) may be performed, in addition to that performed as scheduled maintenance under paragraph (a)(1) of this section, if the idle speed exceeds the manufacturer's recommended idle speed by 300 rpm or more, or if there is a problem of stalling.

(D) The idle mixture may be reset, other than during scheduled major engine tuneups, only with the advance approval of the Administrator.

(ii) *For diesel vehicles,* unscheduled maintenance on the engine emission control system, and fuel system of durability-data vehicles may be performed except as provided in paragraph (a)(5)(i) of this section, only under the following provisions:

(A) Injectors may be changed if a persistent misfire is detected.

(B) Readjustment of the engine idle speed (curb idle and fast idle) may be performed in addition to that performed as scheduled maintenance under paragraph (a)(1) of this section, if the idle speed exceeds the manufacturer's recommended idle speed by 300 rpm or more, or if there is a problem of stalling.

(3) An exhaust gas recirculation (EGR) system may be serviced during durability testing only under one of the following provisions:

(i) Manufacturers may schedule service to the EGR system at the scheduled major engine tuneup, if an audible and/or visual signal approved by the Administrator alerts the vehicle operator to the need for EGR system maintenance at each of those mileage points. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test vehicle unrepresentative of vehicles in use.

(ii) Manufacturers may service the EGR system as unscheduled maintenance a maximum of three times during the 50,000 miles if failure of the EGR system activates an audible and/or visual signal approved by the Administrator which alerts the vehicle operator to the need for EGR system maintenance. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test vehicle unrepresentative of vehicles in use.

(iii) Manufacturers may service the EGR system a maximum of three times during the 50,000 miles either at a scheduled major engine tuneup point or as unscheduled maintenance, if an audible and/or visual signal approved by the Administrator alerts the vehicle operator to the need for EGR system maintenance. The signal may be activated either by the EGR system failure (unscheduled maintenance) or need for scheduled periodic

maintenance. If maintenance is performed, the signal for scheduled periodic maintenance shall be reset. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test vehicle unrepresentative of vehicles in use.

(iv) Manufacturers may schedule service to the EGR system at the scheduled major engine tuneup(s) if failure to perform EGR system maintenance is not likely, as determined by the Administrator, to result in an improvement in vehicle performance. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test vehicle unrepresentative of vehicles in use.

(4) The catalytic converter may be serviced once during 50,000 miles if an audible and/or visual signal approved by the Administrator alerts the vehicle operator to the need for maintenance. The signal may be activated either by component failure or need for maintenance at a scheduled point.

(5) Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on durability-data vehicles shall be performed only with the advance approval of the Administrator.

(i) In the case of unscheduled maintenance, such approval will be given if the Administrator:

(A) Has made a preliminary determination that part failure or system malfunction, or the repair of such failure or malfunction, does not render the vehicle unrepresentative of vehicles in use, and does not require direct access to the combustion chamber, except for spark plug, fuel injection component, or removable prechamber removal or replacement; and

(B) Had made a determination that the need for maintenance or repairs is indicated by an overt indication of malfunction such as persistent misfiring, vehicle stalling, overheating, fluid leakage, loss of oil pressure, or charge indicator warning. For the evaporative emission control system, this overt indication may be indicated by such items as fuel odor or fluid leakage.

(ii) Emission measurements may not be used as a means of determining the need for unscheduled maintenance under paragraph (a)(5)(i)(A) of this section.

(iii) Requests for authorization of scheduled maintenance of emission control-related components not specifically authorized to be maintained by these regulations must be made prior to the beginning of durability testing. The Administrator will approve the performance of such maintenance if the manufacturer makes a satisfactory showing that the maintenance will be performed on vehicles in use.

(6) If the Administrator determines that part failure or system malfunction occurrence and/or repair rendered the vehicle unrepresentative of vehicles in use, the vehicle shall not be used as a durability-data vehicle.

(7) Where the Administrator agrees under § 86.082–28 to a mileage accumulation of less than 50,000 miles for durability testing, he may modify the requirements of this paragraph.

(8)(i) Adjustment of engine idle speed on emission-data vehicles may be performed once before the 6,436-kilometer (4,000-mile) test point. Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on emission-data vehicles shall be performed only with the advance approval of the Administrator.

(ii) Maintenance on emission-data vehicles selected under § 86.082–24(b)(1)(v) or (b)(1)(viii) and permitted to be tested for purposes of § 86.082–23(b)(1) (i) and (ii) under the provisions of § 86.082–24(b)(1)(vi) may be performed in conjunction with emission control system modifications at the 6,436-kilometer (4,000-mile) test point, and shall be performed in accordance with the maintenance instructions to be provided to the ultimate purchaser required under § 86.079–38.

(iii) Maintenance on those emission-data vehicles selected under § 86.082–24(b)(1)(v) which are not capable of being modified in the field for the purpose of complying with emission standards at an altitude other than intended by the original design may be performed in conjunction with the emission control system modifications at the 6,436-kilometer (4,000-mile) test point, and shall be approved in advance by the Administrator.

(9) Repairs to vehicle components of the durability-data or emission-data vehicle, other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure, vehicle system malfunction, or with the advance approval of the Administrator.

(10) Complete emission tests (see §§ 86.106 through 86.145) are required, unless waived by the Administrator, before and after any vehicle maintenance which may reasonably be expected to affect emissions. These test data may be submitted weekly to the Administrator, but shall be air posted or delivered within 7 days after completion of the tests, along with a complete record of all pertinent maintenance, including a preliminary engineering report of any malfunction diagnosis and the corrective action taken. A complete engineering report shall be delivered or air posted to the Administrator within 30 working days after the tests. In addition, all test data and maintenance reports shall be compiled and provided to the Administrator in accordance with § 86.082–23.

(11) The Administrator shall be given the opportunity to verify the existence of an overt indication of part failure and/or vehicle malfunction (e.g., misfiring, stalling, black smoke), or an activation of an audible and/or visual signal, prior to the performance of any maintenance to which such overt indication or signal is relevant under the provisions of this section.

(12) Equipment, instruments, or tools may not be used to identify malfunctioning, maladjusted, or defective engine components unless the same or equivalent equipment, instruments, or tools will be available to dealerships and other service outlets and;

(i) Are used in conjunction with scheduled maintenance on such components.

(ii) Are used subsequent to the identification of a vehicle or engine malfunction, as provided in paragraph (a)(5)(i) of this section for durability-data vehicles or paragraph (a)(8)(i) of this section for emission-data vehicles, or

(iii) Unless specifically authorized by the Administrator.

(b) [Reserved]

(c)(1) *Heavy-duty engines.* Paragraph (c) of this section applies to heavy-duty engines.

(2)(i) The scheduled maintenance described in this section may be performed on a durability-data engine provided the maintenance is requested in the application for certification. Such scheduled maintenance must be specified at the same intervals in the maintenance instructions furnished to the ultimate purchaser of the vehicle in which the engine, represented by the test engine, is installed. (For equivalent dynamometer hours, engine hours, and mileage intervals, see § 86.082–2.) A scheduled major engine servicing shall be restricted to items listed in this subparagraph and shall be conducted in a manner consistent with service instructions and specifications provided

by the manufacturer for use by the customer service personnel.

(A) For gasoline-fueled engines, major engine tuneups to manufacturer's specifications may be performed no more frequently than every 375 hours of scheduled dynamometer operation: *Provided,* no tuneups are performed after 1,375 hours of scheduled dynamometer operation. The following items may be inspected, replaced, cleaned, adjusted, and/or serviced as required:

(1) Ignition system

(2) Cold starting enrichment system (includes fast idle speed setting).

(3) Curb idle speed and air/fuel mixture.

(4) Drive belt tension on engine accessories.

(5) Valve lash.

(6) Inlet air and exhaust gas control valves.

(7) Engine bolt torque.

(8) Spark plugs.

(9) Fuel filter and air filter.

(10) Crankcase emission control system.

(11) Fuel evaporative emission control system.

(B) For diesel engines one major engine servicing to the manufacturer's specifications may be performed prior to 875 hours (±8 hours) of scheduled dynamometer operation. The following items may be inspected, replaced, cleaned, adjusted, and/or serviced as required:

(1) Low idle speed.

(2) Drive belt tension.

(3) Engine bolt torque.

(4) Valve lash.

(5) Injection timing.

(6) Injector assemblies.

(7) Governor settings.

(C) Normal engine servicing such as engine oil change, and oil filter, fuel filter, and air filter cleaning or replacement will be allowed at manufacturer's recommended intervals. If approved in advance by the Administrator, the maintenance for these items may differ from that specified in the manufacturer's maintenance instructions.

(D) Readjustment of the engine low idle speed may be performed once during the first 125 hours of engine operation.

(ii) Unscheduled maintenance may be performed on durability-data engines, except as provided in paragraph (c)(2)(v)(A) of this section, only under the following provisions:

(A) An injector or spark plug may be changed if a persistent misfire is detected.

(B) Readjustment of a gasoline-fueled engine cold-start enrichment system may be performed if there is a problem of stalling or if there is visible black smoke.

(C) Readjustment of the engine idle speed (curb idle and fast idle) may be performed, in addition to that performed as scheduled maintenance under paragraph (c)(2)(i) of this section, if the idle speed exceeds the manufacturer's recommended idle speed by 300 rpm or more, or if there is a problem of stalling.

(D) The idle mixture may be reset, other than during scheduled major engine tuneups, only with the advance approval of the Administrator.

(iii) Any exhaust gas recirculation (EGR) system may be serviced during durability testing only under one of the following provisions:

(A) Manufacturers may schedule service to the EGR system at the scheduled major engine tuneup if an audible and/or visual signal approved by the Administrator alerts the engine operator to the need for EGR system maintenance at the service point. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test engine unrepresentative of engines in use.

(B) Manufacturers may service the EGR system as unscheduled maintenance a maximum of one time during durability testing (1,500 hours for gasoline-fueled engines or 1,000 hours for diesel engines) if failure of the EGR system activates an audible and/or visual signal approved by the Administrator which alerts the engine operator to the need for EGR system maintenance. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test engine unrepresentative of engines in use.

(C) Manufacturers may service the EGR system a maximum of three times during durability testing (1,500 hours for gasoline-fueled engines or 1,000 hours for diesel engines) either at a scheduled major engine tuneup point or as unscheduled maintenance, if an audible and/or visual signal approved by the Administrator alerts the engine operator to the need for EGR system maintenance. The signal may be activated either by EGR system failure (unscheduled maintenance) or need for scheduled periodic maintenance. If maintenance is performed, the signal for scheduled periodic maintenance shall be reset. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test engine unrepresentative of engines in use.

(D) Manufacturers may schedule service to the EGR system at the scheduled major engine tuneup(s) if failure to perform EGR system maintenance is not likely as determined by the Administrator, to result in an improvement in engine performance. One additional servicing may also be performed as unscheduled maintenance if there is an overt indication of malfunction and if the malfunction or repair of the malfunction does not render the test engine unrepresentative of engines in use.

(iv) The catalytic converter may be serviced once during durability testing (1,500 hours for gasoline-fueled engines or 1,000 hours for diesel engines) if an audible and/or visual signal approved by the Administrator alerts the engine operator to the need for maintenance. The signal may be activated either by component failure or need for maintenance at a scheduled point.

(v) Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning or replacement on durability-data engines shall be performed only with the advance approval of the Administrator.

(A) In the case of unscheduled maintenance, such approval will be given if the Administrator:

(1) Has made a preliminary determination that part failure or system malfunction, or the repair of such failure or malfunction, does not render the engine unrepresentative of engines in use, and does not require direct access to the combustion chamber, except for spark plug, fuel injection components, or removable prechamber removal or replacement; and,

(2) Has made a determination that the need for maintenance or repairs is indicated by an overt indication of malfunction such as persistent misfiring, engine stalling, overheating, fluid leakage, loss of oil pressure, excessive fuel consumption or excessive power loss.

(B) Emission measurements may not be used as a means of determining the need for unscheduled maintenance under paragraph (c)(2)(v)(A)(*1*) of this section.

(C) Requests for authorization of scheduled maintenance of emission control related components not specifically authorized to be maintained by these regulations must be made prior to the beginning of durability testing. The Administrator will approve the performance of such maintenance if the

manufacturer makes a satisfactory showing that the maintenance will be performed on engines in use.

(vi) If the Administrator determines that part failure or system malfunction occurrence and /or repair rendered the engine unrepresentative of engines in use, the engine shall not be used as a durability-data engine.

(3)(i) Scheduled maintenance on emission-data engines is limited to the adjustment of idle speed once before the 125-hour test point, provided the idle speed is outside the manufacturer's specification.

(ii) Any other engine, emission control system, or fuel system, adjustment, repair, removal, disassembly, cleaning, servicing, or replacement shall be performed only with the advance approval of the Administrator.

(4) [Reserved]

(5)(i) Complete emission tests (see Subparts D or H of this part for gasoline-fueled engines and Suparts D and I, of this part for diesel engines) are required, unless waived by the Administrator, before and after:

(A) Scheduled maintenance approved for durability-data engines, except maintenance performed under § 86.082–25(c)(2)(i)(C);

(B) Unscheduled maintenance which may reasonably be expected to affect emissions.

(ii) The tests before and after scheduled maintenance, which are performed on durability-data engines prior to 117 hours, are waived. The test before scheduled maintenance, which is performed on durability-data engines after 117 hours and prior to 133 hours, is waived. The after-maintenance test must be run and the results used in the deterioration factor calculation in accordance with § 86.082–28

(iii) The idle speed reset and any scheduled maintenance on the emission-data engine shall be performed prior to the 125-hour test. The before-maintenance and after-maintenance tests associated with idle speed reset and scheduled maintenance on the emission-data engine are waived.

(iv) Test data required by this paragraph may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within seven (7) days after the completion of the test, along with a complete record of all pertinent maintenance.

(v) When unscheduled maintenance is approved, a preliminary engineering report, unless waived by the Administrator, shall be air posted or delivered within 7 working days. A final engineering report shall be delivered or air posted within 30 working days after the completion of the emission tests. The Administrator may approve an extension of the time requirements for the final engineering report.

(vi) All test data, maintenance reports, and required engineering reports shall be compiled and provided to the Administrator in accordance with § 86.082–23.

(6) The Administrator shall be given the opportunity to verify the existence of an overt indication of part failure and/or engine malfunction (e.g., misfiring, stalling).

(7) Equipment, instruments, or tools may not be used to identify malfunctioning, maladjusted, or defective engine components unless the same or equivalent equipment, instruments, or tools will be available to dealerships and other service outlets, and:

(i) Are used in conjunction with scheduled maintenance on such components;

(ii) Are used subsequent to the identification of an engine failure or malfunction, as provided in paragraph (c)(2)(v)(A) of this section for durability-data engines or paragraph (c)(3) of this section for emission-data engines; or,

(iii) Unless specifically authorized by the Administrator.

10. Section 86.082–26 is amended by revising paragraphs (a)(3)(i)(A), (a)(3)(i)(B), (a)(3)(i)(C), (a)(3)(ii)(A), (a)(3)(ii)(B), (a)(3)(ii)(C), (a)(4)(i), (a)(4)(ii), (a)(4)(iii), (a)(5), (a)(6)(i), (a)(6)(ii), (a)(7), (a)(8), (b)(5), (b)(6), (b)(7), (b)(8)(i), (b)(8)(ii), and (b)(9), and adding paragraphs (a)(4)(iv), (a)(6)(iii), and (b)(8)(iii), as follows:

§ 86.082–26 Mileage and service accumulation; emission measurements.

(a) * * *

(3) * * *

(i) * * * (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.082–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.082–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust and evaporative (if required) emission tests shall be conducted for each emission-data vehicle selection under § 86.082–24(b)(1). The Administrator may determine under § 86.082–24(f) that no testing is required.

(B) Emission tests for emission-data vehicle(s) selected under § 86.082–24(b)(1)(v) or (viii) shall be conducted under high-altitude conditions.

(C) Exhaust and evaporative emission tests for emission-data vehicle(s) selected for testing under § 86.082–24(b)(1) (i), (ii), (iv) or (vii) shall be conducted under low-altitude conditions.

(ii) *Diesel* (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.082–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.082–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust emission tests shall be conducted for each emission-data vehicle selection under § 86.082–24(b)(1). The Administrator may determine under § 86.082–24(f) that no testing is required.

(B) Emission tests for emission-data vehicle(s) selected for testing under § 86.082–24(b)(1)(v) or (viii) shall be conducted under high-altitude conditions.

(C) Emission tests for emission-data vehicle(s) selected under § 86.082–24(b)(1)(i), (ii), and (iv) shall be conducted under low-altitude conditions.

* * * * *

(4) * * *

(i) *Gasoline-fueled.* Each gasoline-fueled durability-data vehicle selected by the Administrator or elected by the manufacturer under § 86.082–24(c)(1) shall be driven, with all emission control systems installed and operating, for 50,000 miles or such lesser distance as

the Administrator may agree to as meeting the objective of this procedure. Complete exhaust emission tests shall be made on all durability-data vehicles selected by the Administrator or elected by the manufacturer under § 86.082–24(c) at test point mileage intervals that the manufacturer determines. At a minimum, complete exhaust emission tests shall be made at 5,000 miles, and at 50,000 miles. The mileage interval between test points must be of equal length except for the interval between zero miles and 5,000 miles, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance as specified in § 86.082–25(a)(10). The Administrator may determine under § 86.082–24(f) that no testing is required.

(ii) *Diesel.* Each diesel durability-data vehicle shall be driven, with all emission control systems installed and operating, for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objectives of this procedure. Complete emission tests (see §§ 86.106 through 86.145) shall be made at test point mileage intervals that the manufacturer determines. At a minimum complete exhaust emission tests shall be made at 5,000 miles and at 50,000 miles. The mileage interval between test points must be of equal length except for the interval between zero miles and 5,000 miles, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance as specified in § 86.082–25(a)(10).

(iii) Production durability-data vehicles selected under § 86.082–24(h)(1) shall be driven and tested in accordance with paragraphs (a)(4)(i) and (a)(4)(ii) of this section with the exception that the emission test specified for the 5,000-mile point shall be conducted at the 4,000-mile point.

(iv) The manufacturer may, at its option, alter the durability-data vehicle at the selected test point to represent emission-data vehicle(s) within the same engine/system combination and perform emission tests on the altered vehicle. Upon completion of emission testing, the manufacturer may return the test vehicle to the durability-data vehicle configuration and continue mileage accumulation.

(5) All tests required by this subpart on durability-data vehicles shall be conducted within 250 miles of each of the test points.

(6)(i) If the manufacturer conducts multiple tests at any test point at which the data are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed three valid tests unless the manufacturer chooses to average the test results. If the manufacturer chooses to average the test results at a test point, it may conduct more tests than the minimum number of tests conducted at any other test point. The results of all valid test data must be included in the average. The test results obtained from emission tests performed before maintenance affecting emissions shall not be averaged with test results after the maintenance. The manufacturer shall follow the same procedure for all exhaust pollutants in the vehicle's data set.

(ii) The results of all emission testing shall be supplied to the Administrator. The manufacturer shall furnish to the Administrator explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. Tests between test points may be conducted as required by the Administrator. Data from all tests (including voided tests) may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within 7 days after completion of the test. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.082–23. Where the Administrator conducts a test on a durability-data vehicle at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(iii) The results of all emission tests shall be rounded, using the "Rounding Off Method" specified in ASTM E 29–67, to the number of places to the right of the decimal point indicated by expressing the applicable emission standard of this subpart to three significant figures.

(7) Whenever a manufacturer intends to operate and test a vehicle which may be used for emission or durability data, the manufacturer shall retain in its records all information concerning all emission tests and maintenance, including vehicle alterations to represent other vehicle selections. For emission-data vehicles this information shall be submitted, including the vehicle description and specification information required by the Administrator, to the Administrator following the emission-data tests required under paragraph (a)(3) of this section. For durability-data vehicles, this information shall be submitted following the 5,000-mile test.

(8) Once a manufacturer submits the information required in paragraph (a)(7) of this section for a durability-data vehicle, the manufacturer shall continue to run the vehicle to 50,000 miles and the data from the vehicle will be used in the calculations under § 86.082–28. Discontinuation of a durability-data vehicle shall be allowed only with the written consent of the Administrator.

* * * * *

(b) * * *

(5) *Emission-data engines:* The manufacturer shall determine for each engine family, the number of hours at which the engine system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested a record of the rationale used in making this determination. The manufacturer may elect to accumulate 125 hours on each test engine within an engine family without making a determination. Any engine used to represent emission-data engine selections under § 86.082–24(b)(2) shall be equipped with an engine-system combination that has accumulated at least the number of hours determined under this paragraph. Complete exhaust emission tests shall be conducted for each emission-data engine selection under § 86.082–24(b)(2). Evaporative emission controls need not be connected provided normal operating conditions are maintained in the engine induction system. The Administrator may determine under § 86.082–24(f) that no testing is required.

(6) *Durability-data engines:* Each gasoline-fueled durability-data engine shall be operated, with all emission control systems installed and operating, for 1,500 hours. Each diesel durability-data engine shall be operated for 1,000 hours. A zero-hour emission test may be performed prior to beginning service accumulation. Complete emission tests shall be made at a minimum of 125 hours and the completion of service accumulation. The service hours interval between test points must be of equal length except for the interval between zero hours and 125 hours, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance as specified in § 86.082–25(c)(5). Evaporative emission controls need not be connected provided normal operating conditions are maintained in the engine induction system.

(7) All tests required by this subpart may be conducted at any accumulated number of hours within 8 hours of the test point.

(8)(i) Data from all emission tests (including voided tests) may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within 7 days after completion of the test. The manufacturer

shall furnish to the Administrator an explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. Tests between test points may be conducted as required by the Administrator. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.082–23. Where the Administrator conducts a test on a durability-data engine at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(ii) If a manufacturer conducts multiple tests at any test point at which the data are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed three valid tests unless the manufacturer chooses to average the test results. If the manufacturer chooses to average the test results at a test point, it may conduct more tests than the minimum number of tests conducted at any other test point. The results of the multiple tests shall be averaged to create a single value which is the test point value used in the deterioration factor calculation specified in § 86.082–28. When using this option to generate data for a particular test point, the manufacturer must include in the average all valid test data generated at that test point. The manufacturer shall follow the same procedure for all exhaust pollutants. The test results obtained from emission tests performed before and after maintenance affecting emissions shall not be averaged.

(iii) The results of all emission tests shall be recorded and reported to the Administrator using two places to the right of the decimal point. These numbers shall be rounded in accordance with the "Rounding Off Method" specified in ASTM E 29–67.

(9) Whenever a manufacturer intends to operate and test an engine which may be used for emission or durability data, the manufacturer shall retain in its records all information concerning all emission tests and maintenance, including engine alterations to represent other engine selections. For emission-data engines this information shall be submitted, including the engine description and specification information required by the Administrator, to the Administrator following the emission-data tests required under paragraph (b)(5) of this section. For durability-data engines, this information shall be submitted following the final durability-data test.

* * * * *

11. Section 86.082–28 is amended by revising paragraphs (a)(4)(i)(A), (a)(4)(i)(B), (a)(4)(ii)(A), (a)(4)(ii)(B), and (b)(4)(i)(B) and adding paragraphs (a)(4)(i)(A)(*4*), and (b)(4)(i)(A)(*4*), as follows:

§ 86.082–28 Compliance with emission standards.

(a) * * *
(4) * * *
(i) * * *

(A) The applicable results to be used, unless excluded by paragraph (a)(4)(i)(A)(*4*) of this section, in determining the exhaust emission deterioration factors for each engine-system combination shall be:

* * * * *

(*4*) The manufacturer has the option of applying an outlier test point procedure to completed durability data within its certification testing program for a given model year. The decision to apply to the outlier procedure shall be made separately for light-duty vehicles and light-duty trucks. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the determination of deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator, before the certification of the first light-duty vehicle or light-duty truck engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply the outlier procedure to a data set that contains data which was averaged under § 86.082–28(a)(6)(i) the averaging shall be completed prior to applying the outlier procedure.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 4,000-mile and 50,000 mile points on this line are within the low-altitude standards provided in § 86.082–8 or § 86.082–9, as applicable. Exceptions to this where the data are still acceptable are when a best fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight line crosses an applicable standard with a negative slope (the 4,000-mile interpolated point is higher than the 50,000-mile interpolated point) but the 5,000-mile actual data point is below the standard. A multiplicative exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor = Exhaust emissions interpolated to 50,000 miles divided by exhaust emissions interpolated to 4,000 miles.

These interpolated values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29–67.

* * * * *

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the selected test point shall be multiplied by the appropriate deterioration factor: *Provided:* that if a deterioration factor as computed in paragraph (a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results (gasoline-fueled vehicles only) for each evaporative emission-data vehicle at the selected test point shall be adjusted by addition of the appropriate deterioration factor: *Provided:* That if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

* * * * *

(b) * * *
(4) * * *
(i) * * *
(A) * * *

(4) The manufacturer has the option of applying an outlier test point procedure to all completed durability data within its certification testing program for a given model year. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the determination of deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator, before the certification of the first engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply the outlier procedure to a data set that contains data which was averaged under § 86.082–28(b)(8)(ii) the averaging shall be completed prior to applying the outlier procedure.

(B) All applicable emission results for (1) HC, (2) CO, (3) HC + NO_x, (4) acceleration smoke ("A"), (5) lugging smoke ("B"), and (6) peak smoke ("C") shall be plotted as a function of durability hours which shall be consistently rounded to the nearest hour. Emission data shall have two figures to the right of the decimal. The best fit straight lines, fitted by the method of least squares, shall be drawn through these data points. These data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 125-hour and 1,500-hour points for gasoline-fueled engines or the 1,000-hour point for diesel engines on this line are within the low-altitude standards provided in § 86.080–10 or § 86.080–11, as applicable. Exceptions to this where the data are still acceptable are when a best fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight line crosses and applicable standard with a negative slope (the 125-hour interpolated point is higher than the 1,500-hour or 1,000-hour, as applicable, interpolated point) but the 125-hour actual data point is below the standard.

* * * * *

12. Section 86.082–30 is amended by revising paragraphs (a)(2), (a)(3), (a)(6), (a)(7), (a)(8), (a)(9), (b)(5)(ii), and (b)(5)(iii) to read as follows:

§ 86.082–30 Certification.

(a) * * *

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary to assure that any new motor vehicle (or new motor vehicle engine) covered by the certificate will meet the requirements of the Act and of this part.

(3) One such certificate will be issued for each engine family. For gasoline-fueled light-duty vehicles and light-duty trucks, one such certificate will be issued for each engine family-evaporative emission family combination. Each certificate will certify compliance with no more than one set of standards except for low-altitude standards and high-altitude standards. The certificate shall cover vehicles sold or delivered to an ultimate purchaser for principal use at a designated high-altitude location only if the vehicle conforms in all material respects to the design specification that applied to those vehicles described in the application for certification at high altitude.

* * * * *

(6) The provisions of paragraph (a)(4) of this section shall not apply to any light-duty vehicle or light-duty truck sold, offered for sale, introduced, or delivered for introduction into commerce in California provided that the vehicle is covered by a certificate of conformity with emission standards in effect in California.

(7) Catalyst-equipped vehicles, otherwise covered by a certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of the catalysts. If these vehicles are imported or offered for the importation without retrofit of the catalyst, they will be considered not to be within the coverage of the certificate unless included in a catalyst control program operated by a manufacturer or a United States Government Agency and approved by the Administrator.

(8) For incomplete light-duty trucks, a certificate covers only those new motor vehicles which, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.082–21(d).

(9) For heavy-duty engines, a certificate covers only those new motor vehicle engines installed in heavy-duty vehicles which conform to the minimum gross vehicle weight rating, curb weight, or frontal area limitations for heavy-duty vehicles described in § 86.082–2.

(b) * * *

(5) * * *

(ii) Delete from the application for certification the engines represented by the failing test engine. (Engines so deleted may be included in a later request for certification under § 86.079–32.) The Administrator may then select in place of each failing engine an alternate engine chosen in accordance with selection criteria employed in selecting the engine that failed; or

(iii) Modify the test engine and demonstrate by testing that it meets applicable standards. Another engine, which is in all material respects the same as the first engine, as modified, may then be operated and tested in accordance with applicable test procedures.

* * * * *

13. A new § 86.082–34 is added, as follows:

§ 86.082–34 Alternative procedure for notification of additions and changes.

(a) A manufacturer may, in lieu of notifying the Administrator in advance of an addition of a vehicle (or engine) under § 86.079–32 or a change in a vehicle (or engine) under § 86.079–33, notify the Administrator concurrently with making an addition of a vehicle or a change in a vehicle, if the manufacturer determines that following the change all vehicles (or engines) effected by the addition or change will still meet the applicable emission standards. Such notification shall include a full description of the addition or change and any supporting documentation the manufacturer may desire to include to support the manufacturer's determination. The manufacturer's determination that the addition or change does not cause noncompliance shall be based on an engineering evaluation of the addition or change and/or testing.

(b) The Administrator may require that additional emission testing be performed to support the manufacturers original determination submitted in paragraph (a) of this section. If additional testing is required the Administrator shall proceed as in § 86.079–32 (b) and (c) or § 86.079–33 (b) and (c) as appropriate. Additional test data, if requested, must be provided within 30 days of the request or the manufacturer must rescind the addition or change immediately. The Administrator may grant additional time to complete testing. If based on this additional testing or any other information, the Administrator determines that the vehicles effected by the addition or change do not meet the applicable standards the Administrator will notify the manufacturer to rescind the addition or change immediately upon receipt of the notification.

(c) Election to produce vehicles (or engines) under this section will be deemed to be a consent to recall all vehicles (or engines) which the Administrator determines under § 86.079–32(c) do not meet applicable standards, and to cause such nonconformity to be remedied at no expense to the owner.

14. Section 86.084–23 is amended by revising paragraphs (c)(1)(i) and (c)(2), and reserving paragraphs (a)(1), (a)(2), and (c)(1)(ii), as follows:

§ 86.084–23 Required data.

(a) The manufacturer shall perform the tests required by the applicable test procedures, and submit to the Administrator the following information: *Provided, however,* that if requested by the manufacturer, the Administrator may waive any requirement of this section for testing of vehicles (or engine) for which emission data are available,

or will be made available, under the provisions of § 86.081–29.

(1) [Reserved]

(2) [Reserved]

* * * * *

(c) * * *

(1) * * *

(i) Emission data on such vehicles tested in accordance with applicable test procedures and in such numbers as specified. These data shall include zero-mile data, if generated, and emission data generated for certification as required under § 86.084–26(a)(3)(i) or § 86.084–26(a)(3)(ii).

(ii) [Reserved]

(2) *Certification engines.* Emission data on such engines tested in accordance with applicable emission test procedures, of this subpart and in such numbers as specified. These data shall include zero hour data, if generated, and emission data generated for certification as required under § 86.084–26(b)(5).

* * * * *

15. Section § 86.084–24 is amended by revising paragraphs (a)(2), (a)(4), (a)(8), (a)(9), (a)(10), (b)(1)(i), (b)(1)(ii), (b)(1)(iii), (b)(1)(iv), (b)(1)(vii)(A), (b)(1)(vii)(B), (b)(1)(vii)(C), (b)(2)(iii), and (g)(3), adding paragraphs (a)(4)(i), (a)(4)(ii), (a)(11), (b)(2)(iii)(A), (b)(2)(iii)(B), (b)(2)(v), (e)(1), and (e)(2), and reserving paragraphs (b)(1)(v), (b)(1)(vi), (b)(1)(vii)(D), (b)(1)(vii)(E), and (b)(2)(ii) as follows:

§ 86.084–24 Test vehicles and engines.

(a)(1) * * *

(2) To be classed in the same engine family, engines must be identical in all the following respects:

(i) The cylinder bore center-to-center dimensions.

(ii) [Reserved]

(iii) [Reserved]

(iv) The cylinder block configuration (air cooled or water cooled; L–6, 90°, V–8, etc.).

(v) The location of the intake and exhaust valves (or ports), and the valve (or port) sizes (within a ⅛-inch range on the valve head diameter or within 10 percent on the port area.)

(vi) The method of air aspiration.

(vii) The combustion cycle.

(viii) Catalytic converter characteristics.

(ix) Thermal reactor characteristics.

(x) Type of air inlet cooler (e.g., intercoolers and after coolers) for diesel heavy-duty engines.

* * * * *

(4) Where engines are of a type which cannot be divided into engine families based upon the criteria listed in paragraphs (a)(2) and (a)(3) of this section, the Administrator will establish families for those engines based upon those features most related to their emission characteristics. Engines that are eligible to be included in the same engine family based on the criteria in paragraphs (a)(2) and (a)(3)(i) of this section may be further divided into different engine families if the manufacturer determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the following features of each engine:

(i) The dimension from the center line of the crankshaft to the center line of the camshaft.

(ii) The dimension from the center line of the crankshaft to the top of the cylinder block head face.

* * * * *

(8)(i) If the manufacturer elects to participate in the Alternative Durability Program, the engine families covered by an application for certification shall be grouped based upon similar engine design and emission control system characteristics. Each of these groups shall constitute a separate engine family group.

(ii) To be classed in the same engine family group, engine families must contain engines identical in all of the following respects:

(A) The combustion cycle.

(B) The cylinder block configuration (air-cooled or water-cooled; L–6, V–8 rotary, etc.).

(C) Displacement (engines of different displacement within 50 cubic inches or 15 percent of the largest displacement and contained within a multidisplacement engine family will be included in the same engine family group).

(D) Catalytic converter usage and basic type (non-catalyst, oxidation catalyst only, three-way catalyst equipped).

(9) Engine families identical in all respects listed in paragraph (a)(8) of this section may be further divided into different engine family groups if the Administrator determines that they are expected to have significantly different exhaust emission control system deterioration characteristics.

(10) A manufacturer may request the Administrator to include in an engine family group, engine families in addition to those grouped under the provisions of paragraph (a)(8) of this section. This request must be accompanied by information the manufacturer believes supports the inclusion of these additional engine families.

(11) A manufacturer may combine into a single engine family group those light-duty vehicle and light-duty truck engine families which otherwise meet the requirements of paragraphs (a)(8) through (a)(10) of this section.

(b) * * *

(1) * * *

(i) Vehicles will be chosen to be operated and tested for emission data based upon engine family groupings. Within each engine family, one test vehicle will be selected based on the following criteria: The Administrator shall select the vehicle with the heaviest equivalent test weight (including options) within the family. Then within that vehicle the Administrator shall select, in the order listed, the highest road load power, largest displacement, highest fuel flow at the speed of maximum rated torque, the transmission with the highest numerical final gear ratio (including overdrive), and the highest numerical axle ratio offered in that engine family.

(ii) The Administrator shall select one additional test vehicle from within each engine family. The vehicle selected shall be the vehicle expected to exhibit the highest emissions of those vehicles remaining in the engine family. If all vehicles within the engine family are similar the Administrator may waive the requirements of this paragraph.

(iii) Within an engine family and exhaust emission control system, the manufacturer may alter any emission-data vehicle to represent more than one selection under paragraph (b)(1) (i), (ii), (iv), or (vii) of this section.

(iv) If the vehicles selected in accordance with paragraphs (b)(1)(i) and (ii) of this section do not represent each engine-system combination, then one vehicle of each engine-system combination not represented will be selected by the Administrator. The vehicle selected shall be the vehicle expected to exhibit the highest emissions of those vehicles remaining in the engine family.

(v) [Reserved]

(vi) [Reserved]

(vii)(A) Vehicles of each evaporative emission family will be divided into evaporative emission control systems.

(B) The Administrator will select the vehicle expected to exhibit the highest evaporative emissions, from within each evaporative family to be certified, from among the vehicles represented by the exhaust emission-data selections for the engine family, unless evaporative testing has already been completed on the vehicle expected to exhibit the highest evaporative emissions for the evaporative family as part of another engine family's testing.

(C) If the vehicles selected in accordance with paragraph (b)(1)(vii)(B) of this section do not represent each evaporative emission control system then the Administrator will select the highest expected evaporative emission vehicle from within the unrepresented evaporative system.

(D) [Reserved]

(E) [Reserved]

* * * * *

(2) * * *

(ii) [Reserved]

(iii) The Administrator shall select a maximum of two engines within each engine family based upon features indicating that they may have the highest emission levels of the engines in the engine family as follows:

(A) The Administrator shall select one emission-data engine first based on the largest displacement within the engine family. Then within the largest displacement the Administrator shall select, in the order listed, highest fuel flow at the speed of maximum rated torque, the engine with the most advanced spark timing, no EGR or lowest EGR flow, and no air pump or lowest actual flow air pump.

(b) The Administrator shall select one additional engine, from within each engine family. The engine selected shall be the engine expected to exhibit the highest emissions of those engines remaining in the engine family. If all engines within the family are similar the Administrator may waive the requirements of this paragraph.

* * * * *

(v) Within an engine family and emission control system, the manufacturer may alter any emission-data engine to represent more than one selection under paragraph (b)(2)(iii) and (iv) of this section.

* * * * *

(e)(1) Any manufacturer whose projected sales for the model year in which certification is sought is less than:

(i) 2,000 gasoline-fueled light-duty vehicles, or

(ii) 2,000 diesel light-duty vehicles, or

(iii) 2,000 gasoline-fueled light-duty trucks, or

(iv) 2,000 diesel light-duty trucks, or

(v) 2,000 gasoline-fueled heavy-duty engines, or

(vi) 2,000 diesel heavy-duty engines, may request a reduction in the number of test vehicles (or engines) determined in accordance with the foregoing provisions of this section. The Administrator may agree to such lesser number as he determines would meet the objectives of this procedure.

(2) Any manufacturer may request to certify engine families with combined total sales of fewer than 10,000 light-duty vehicles, light-duty trucks, and heavy-duty engines utilizing assigned deterioration factors prescribed by the Administrator. The assigned deterioration factors shall be applied only to entire engine families.

* * * * *

(g) * * *

(3)(i) Where it is expected that more than 33 percent of a car line within an engine-system combination will be equipped with an item of optional equipment that can reasonably be expected to influence emissions, then such items shall actually be installed (unless excluded under paragraph (g)(3)(ii) of this section) on all emission-data and durability-data vehicles of that car line, within that engine-system combination, on which the items are intended to be offered in production. Optional equipment that can reasonably be expected to influence emissions are the air conditioner, power steering, power brakes and other items determined by the Administrator.

(ii) If the manufacturer determines by test data or engineering evaluation that the actual installation of the optional equipment required by paragraph (g)(3)(i) of this section does not affect the emissions or fuel economy values, the optional equipment need not be installed on the test vehicle. The weight of the options shall be included in the design curb weight and also be represented in the weight of the test vehicles. The engineering evaluation, including any test data, used to support the deletion of optional equipment from test vehicles, shall be maintained by the manufacturer and shall be made available to the Administrator upon request.

* * * * *

16. Section 86.084–25 is amended by revising paragraphs (a)(1), (a)(10), (b)(5)(iv), and (b)(5)(v) and reserving paragraphs (a)(8)(ii), (a)(8)(iii), (b)(3)(ii), and (b)(3)(iii), as follows:

§ 86.084–25 Maintenance.

(a) *Light-duty vehicles and light-duty trucks.* Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(1) Scheduled maintenance on the engine, emission control system, and fuel system of durability-data vehicles, selected by the Administrator or elected by the manufacturer under § 86.084–24(c)(1), shall be scheduled for performance during durability testing at the same mileage intervals that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the motor vehicle. This maintenance schedule may be updated as necessary throughout the durability-data vehicle's testing provided that no maintenance operation is deleted from the maintenance schedule after the operation has been performed on the test vehicle. Such maintenance shall be performed, except as provided in paragraph (a)(5)(iii) of this section, only under the following provisions:

(i) Scheduled major engine tuneups to manufacturer's specifications may be performed no more frequently than every 12,500 miles of scheduled driving: Provided that no tuneup may be performed after 45,000 miles of scheduled driving. A scheduled major engine tuneup shall be restricted to paragraph (a)(1)(i) (A) or (B) of this section, and shall be conducted in a manner consistent with service instructions and specifications provided by the manufacturer for use by customer service personnel.

* * * * *

(8)(i) * * *

(ii) [Reserved]

(iii) [Reserved]

* * * * *

(10) Complete emission tests (see §§ 86.106 through 86.145) are required, unless waived by the Administrator, before and after any vehicle maintenance which may reasonably be expected to affect emissions. These test data may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within 7 days after completion of the tests, along with a complete record of all pertinent maintenance, including a preliminary engineering report of any malfunction diagnosis and the corrective action taken. A complete engineering report shall be delivered or air posted to the Administrator within 30 working days after the tests. In addition, all test data and maintenance reports shall be compiled and provided to the Administrator in accordance with § 86.084–23.

* * * * *

(b) * * *

(3)(i) * * *

(ii) [Reserved]

(iii) [Reserved]

* * * * *

(5) * * *

(iv) Test data required by paragraph (b)(5) of this section shall be air posted or delivered to the Administrator within 7 working days, along with a complete record of all pertinent maintenance.

(v) When unscheduled maintenance is approved, a preliminary engineering report, unless waived by the Administrator, shall be air posted or delivered within 7 working days. A final engineering report shall be delivered or air posted within 30 working days after the completion of the emission tests. The Administrator may approve an extension of the time requirements for the final engineering report.

* * * * *

17. Section 86.084–26 is amended by revising paragraphs (a)(3)(i)(A), (a)(3)(ii)(A), (a)(4)(i), (a)(4)(ii), (a)(5), (a)(6)(i), (a)(6)(ii), (a)(7), (a)(8), (b)(2)(ii), (b)(4)(i)(A), (b)(4)(ii)(A), (b)(4)(iv), (c)(4), (d)(2)(i), (d)(2)(ii), and (d)(3), adding paragraphs (a)(4)(iii), and (a)(6)(iii), and reserving paragraphs (a)(3)(i)(B), (a)(3)(i)(C), (a)(3)(ii)(B), (a)(3)(ii)(C), (b)(4)(i)(B), (b)(4)(i)(C), (b)(4)(ii)(B), (b)(4)(ii)(C), and (d)(4), as follows:

§ 86.084–26 Mileage and service accumulation; emission measurements.

(a) * * *

(3) * * *

(i) * * * (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.084–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.084–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust and evaporative (if required) emission tests shall be conducted for each emission-data vehicle selection under § 86.084–24(b)(1). The Administrator may determine under § 86.084–24(f) that no testing is required.

(B) [Reserved]

(C) [Reserved]

(ii) *Diesel* (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.084–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.084–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust emission tests shall be conducted for each emission-data vehicle selection under § 86.084–24(b)(1). The Administrator may determine under § 86.084–24(f) that no testing is required.

(B) [Reserved]

(C) [Reserved]

(4) * * *

(i) *Gasoline-fueled.* Each gasoline-fueled durability-data vehicle selected by the Administrator or elected by the manufacturer under § 86.084–24(c)(1) shall be driven, with all emission control systems installed and operating, for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objective of this procedure. Complete exhaust emission tests shall be made on all durability-data vehicles selected by the Administrator or elected by the manufacturer under § 86.084–24(c) at test point mileage intervals that the manufacturer determines. At a minimum, complete exhaust emission tests shall be made at 5,000 miles, and at 50,000 miles. The mileage interval between test points must be of equal length for the interval between zero miles and 5,000 miles, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance as specified in § 86.084–25(a)(10). The Administrator may determine under § 86.084–24(f) that no testing is required.

(ii) *Diesel.* Each diesel durability-data vehicle shall be driven, with all emission control systems installed and operating, for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objectives of the procedure. Complete emission tests (see §§ 86.106 through 86.145) shall be made at test point mileage intervals that the manufacturer determines. At a minimum complete exhaust emission tests shall be made at 5,000 miles and at 50,000 miles. The mileage interval between test points must be of equal length for the interval between zero miles and 5,000 miles, the final interval, and any interval before or after testing conducted in conjunction with vehicle maintenance as specified in § 86.084–25(a)(10.

(iii) The manufacturer may, at its option, alter the durability-data vehicle at the selected test point to represent emission-data vehicle(s) within the same engine/system combination and perform emission tests on the altered vehicle. Upon completion of emission testing, the manufacturer may return the test vehicle to the durability-data vehicle configuration and continue mileage accumulation.

(5) All tests required by this subpart on durability-data and emission-data vehicles shall be conducted within 250 miles of each of the test points.

(6)(i) If the manufacturer conducts multiple tests at any test point at which the data are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed three valid tests unless the manufacturer chooses to average the test results. If the manufacturer chooses to average the test results at a test point, it may conduct more tests than the minimum number of tests conducted at any other test point. The results of all valid test data must be included in the average. The test results obtained from emission tests performed before maintenance affecting emissions shall not be averaged with test results after the maintenance. The manufacturer shall follow the same procedure for all exhaust pollutants in the vehicle's data set.

(ii) The results of all emission testing shall be supplied to the Administrator. The manufacturer shall furnish to the Administrator explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. Tests between test points may be conducted as required by the Administrator. Data from all tests (including voided tests) may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within 7 days after completion of the test. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.084–23. Where the Administrator conducts a test on a durability-data vehicle at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(iii) The results of all emission tests shall be rounded, using the "Rounding Off Method" specified in ASTM E 29–67, to the number of places to the right of the decimal point indicated by expressing the applicable emission

standard of this subpart to three significant figures.

(7) Whenever a manufacturer intends to operate and test a vehicle which may be used for emission or durability data, the manufacturer shall retain in its records all information concerning all emissions tests and maintenance, including vehicle alterations to represent other vehicle selections. For emission-data vehicles, this information shall be submitted, including the vehicle description and specification information required by the Administrator, to the Administrator following the emission-data test. For durability-data vehicles, this information shall be submitted following the 5,000-mile test.

(8) Once a manufacturer submits the information required in paragraphs (a)(7) of this section for a durability-data vehicle, the manufacturer shall continue to run the vehicle to 50,000 miles, and the data from the vehicle will be used in the calculations under § 86.084–28. Discontinuation of a durability-data vehicle shall be allowed only with the consent of the Administrator.

* * * * *

(b) * * *

(2) * * *

(i) * * *

(ii) Mileage accumulation of the duration selected by the manufacturer on emission-data vehicles selected under § 86.084–24(b)(1). The procedure for mileage accumulation will be the Durability Driving Schedule as specified in Appendix IV to this part. A modified procedure may also be used if approved in advance by the Administrator. Except with the advance approval of the Administrator, all vehicles will accumulate mileage at a measured curb weight which is within 100 pounds of the estimated curb weight. If the loaded vehicle weight is within 100 pounds of being included in the next higher inertia weight class as specified in § 86.129, the manufacturer may elect to conduct the respective emission tests at the test weight corresponding to the higher loaded vehicle weight.

* * * * *

(4) * * *

(i) * * * (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.084–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.084–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust emission tests shall be conducted for each emission-data vehicle selection under § 86.084–24(b)(1). The Administrator may determine under § 86.084–24(f) that no testing is required.

(B) [Reserved]

(C) [Reserved]

(ii) * * * (A) The manufacturer shall determine, for each engine family, the mileage at which the engine-system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 4,000 miles on each test vehicle within an engine family without making a determination. Any vehicle used to represent emission-data vehicle selections under § 86.084–24(b)(1) shall be equipped with an engine and emission control system that has accumulated at least the mileage determined under this paragraph. Fuel economy data generated from certification vehicles selected in accordance with § 86.084–24(b)(1) with engine-system combinations that have accumulated more than 10,000 kilometers (6,200 miles) shall be factored in accordance with § 600.006–82(c). Complete exhaust emission tests shall be conducted for each emission-data vehicle selection under § 86.084–24(b)(1). The Administrator may determine under § 86.084–24(f) that no testing is required.

(B) [Reserved]

(C) [Reserved]

(iii) * * *

(iv) All tests required by this subpart on durability-data vehicles shall be conducted within 250 miles of each of the test points.

* * * * *

(c) * * *

* * * * * *

(4) The manufacturer shall determine, for each engine family, the number of hours at which the engine system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested a record of the rationale used in making this determination. The manufacturer may elect to accumulate 125 hours on each test engine within an engine family without making a determination. Any engine used to represent emission-data engine selections under § 86.084–24 (b)(2) shall be equipped with an engine system combination that has accumulated at least the number of hours determined under this paragraph. Complete exhaust emission tests shall be conducted for each emission-data engine selection under § 86.084–24(b)(2). Evaporative emission controls need not be connected provided normal operating conditions are maintained in the engine induction system. The Administrator may determine under § 86.084(f) that no testing is required.

* * * * *

(d)(1) * * *

(2)(i) The results of all emission testing shall be supplied to the Administrator. The manufacturer shall furnish to the Administrator explanation for voiding any test. The Administrator will determine if voiding the test was appropriated based upon the explanation given by the manufacturer for the voided test. Tests between test points may be conducted as required by the Administrator. Data from all tests (including voided tests) may be submitted weekly to the Administrator, but shall be air posted or delivered to the Administrator within 7 days after completion of the tests. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.084–23. Where the Administrator conducts a test on a durability-data vehicle at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(ii) * * *

(3) Whenever a manufacturer intends to operate and test a vehicle (or engine) which may be used for emission data, the manufacturer shall retain in its records all information concerning all emissions tests and maintenance, including vehicle (or engine) alterations to represent other vehicle (or engine) selections. This information shall be submitted, including the vehicle (or engine) description and specification information required by the Administrator, to the Administrator following the emission-data test.

(4) [Reserved]

* * * * *

18. Section 86.084–28 is amended by revising paragraphs (a)(4)(i)(A), (a)(4)(i)(B), (a)(4)(ii)(A), (a)(4)(ii)(B), (b)(4)(iii), (b)(6)(ii), (b)(6)(iii), (c)(4)(iii)(A), and (c)(4)(iii)(B), and

adding paragraph (a)(4)(i)(A)(*4*), as follows:

§ 86.084–28 Compliance with emission standards.

(a) * * *
(4) * * *
(i) * * *

(A) The applicable results to be used unless excluded by paragraph (a)(4)(i)(A)(*4*) of this section in determining the exhaust emission deterioration factors for each engine-system combination shall be:

* * * * *

(4) The manufacturer has the option of applying an outlier test point procedure to all completed durability data within its certification testing program for a given model year. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator, before the certification of the first engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply the outlier procedure to a data set that contains data which was averaged under § 86.084–26(a)(6)(i) the averaging shall be completed prior to applying the outlier procedure.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 4,000-mile and 50,000-mile points on this line are within the low-altitude standards provided in § 86.083–8 or § 86.083–9, as applicable. Exceptions to this where data are still acceptable are when a best fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight line crosses an applicable standard with a negative slope (then 4,000-mile interpolated point is higher than the 50,000-mile interpolated point) but the 5,000-mile actual data point is below the standard. A multiplicative exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor = Exhaust emissions interpolated to 50,000 miles divided by exhaust emissions interpolated to 4,000 miles.

These interpolated values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29–67.

* * * * *

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the selected test point shall be multiplied by the appropriate deterioration factor: *Provided:* that if a deterioration factor as computed in paragraph (a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results (gasoline-fueled vehicles only) for each evaporative emission-data vehicle at the selected test point shall be adjusted by addition of the appropriate deterioration factor: *Provided:* That if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

* * * * *

(b) * * *
(4) * * *

* * * * *

(iii) For transient HC, CO, and NOx idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only), the official exhaust emission results for each emission-data vehicle at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

* * * * *

(6)(i) * * *

(ii) The manufacturer shall determine, based on testing described in § 86.084–21(b)(4)(i), and supply an evaporative emission deterioration factor for each evaporative emission family-evaporative emission control system combination. The factor shall be calculated by subtracting the emission level at the selected test point from the emission level at the useful life point.

(iii) The official evaporative emission test results for each evaporative emission-data vehicle at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

* * * * *

(c) * * *

* * * * *

(4) * * *

* * * * * *

(iii)(A) For transient HC, CO, NOx (and, in the case of gasoline-fueled engines, for idle CO), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(B) For acceleration smoke ("A"), lugging smoke ("B"), and peak smoke ("C"), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

* * * * *

19. Section 86.084–30 is amended by revising paragraphs (a)(1), (a)(2), (a)(3), (a)(7), (a)(8), (a)(9), (b)(5)(ii), and (b)(5)(iii) to read as follows:

§ 86.084–30 Certification.

(a)(1) If, after a review of the test reports and data submitted by the manufacturer, data derived from any inspection carried out under § 86.078–7(c), and any other pertinent data or information, the Administrator determines that a test vehicle(s) (or test engine(s)) meet(s) the requirements of the Act and of this subpart, he will issue a certificate of conformity with respect to such vehicle(s) (or engine(s)) except in cases covered by paragraph (c) of this section.

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary or appropriate to assure that any new motor vehicle (or new motor vehicle engine) covered by the certificate will meet the requirements of the Act and of this part.

(3) One such certificate will be issued for each engine family. For gasoline-fueled light-duty vehicles and light-duty trucks, one such certificate will be issued for each engine family-evaporative emission family combination. Each certificate will certify compliance with no more than one set of standards.

* * * * *

(7) Catalyst-equipped vehicles, otherwise covered by certificate, which

are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of the catalysts. If these vehicles are imported or offered for importation without retrofit of the catalyst, they will be considered not to be within the coverage of the certificate unless included in a catalyst control program operated by a manufacturer or a United States Government agency and approved by the Administrator.

(8) For incomplete light-duty trucks, a certificate covers only those new motor vehicles which, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.084–21(d).

(9) For heavy-duty engines, a certificate covers only those new motor vehicle engines installed in heavy-duty vehicles which conform to the minimum gross vehicle weight rating, curb weight, or frontal area limitations for heavy-duty vehicles described in § 86.082–2.

* * * * *

(b) * * *

(5) * * *

(ii) Delete from the application for certification the engines represented by the failing test engine. (Engines so deleted may be included in a later request for certification under 86.079–32.) The Administrator may then select in place of each failing engine an alternate engine chosen in accordance with selection criteria employed in selecting the engine that failed; or

(iii) Modify the test engine and demonstrate by testing that it meets applicable standards. Another engine which is in all material respects the same as the first engine, as modified, may then be operated and tested in accordance with applicable test procedures.

* * * * *

20. Section 86.085–28 is amended by revising paragraphs (a)(4)(i)(A), (a)(4)(i)(B), (a)(4)(ii)(A), and (a)(4)(ii)(B), (b)(4)(iii), (b)(6)(ii), (b)(6)(iii), (c)(4)(iii)(A), and (c)(4)(iii)(B), and adding paragraph (a)(4)(i)(A)(*4*), as follows:

§ 86.085–28 Compliance with emission standards.

(a) * * *

(4) * * *

(i) * * *

(A) The applicable results to be used unless excluded by paragraph (a)(4)(i)(A)(*4*) of this section in determining the exhaust emission deterioration factors for each engine-system combination shall be:

* * * * *

(*4*) The manufacturer has the option of applying an outlier test point procedure to all completed durability-data within its certification testing program for a given model year. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the determination of deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator, before the certification of the first engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply the outlier procedure to a data set that contains data which was averaged under § 86.084–26(a)(6)(i) the averaging shall be completed prior to applying the outlier procedure.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 4,000-mile and 50,000-mile points on this line are within the low-altitude standards provided in § 86.083–8 or § 86.083–9, as applicable. Exceptions to this where data are still acceptable are when a best-fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight lines crosses an applicable standard with a negative slope (the 4,000-mile interpolated point is higher than the 50,000-mile interpolated point) but the 5,000-mile actual data point is below the standard. A multiplicative exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor = Exhaust emissions interpolated to 50,000 miles divided by exhaust emissions interpolated to 4,000 miles.

These interpolated values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29–67.

* * * * *

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the selected test point shall be multiplied by the appropriate deterioration factor: *Provided:* that if a deterioration factor as computed in paragraph (a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results (gasoline-fueled vehicles only) for each evaporative emission-data vehicle at the selected test point shall be adjusted by addition of the appropriate deterioration factor: *Provided:* that if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

* * * * *

(b) * * *

(4) * * *

* * * * *

(iii) For transient HC, CO, and NOx, idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only), the official exhaust emission results for each emission-data vehicle at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

* * * * *

(6)(i) * * *

(ii) The manufacturer shall determine, based on testing described in § 86.084–21(b)(4)(i), and supply an evaporative emission deterioration factor for each evaporative emission family-evaporative emission control system combination. The factor shall be calculated by subtracting the emission level at the selected test point from the emission level at the useful life point.

(iii) The official evaporative emission test results for each evaporative emission-data vehicle at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

* * * * *

(c) * * *

* * * * *

(4) * * *

* * * * *

(iii)(A) For transient HC, CO, NOx (and, in the case of gasoline-fueled engines, for idle CO), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor.

However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(B) For acceleration smoke ("A"), lugging smoke ("B"), and peak smoke ("C"), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

* * * * *

21. Paragraph (c)(1)(iv) of § 86.110–82 is revised to read as follows:

§ 86.110–82 Exhaust gas sampling system; diesel vehicles.

* * * * *

(c) * * *

(1) * * *

(iv) A ratio of net weights will be determined by the following formula:

$$\text{Ratio of net weights} = \frac{(\text{Mass particulate})_{\text{primary filter}}}{(\text{Mass particulate})_{\text{primary filter}} + (\text{Mass particulate})_{\text{back-up filter}}}$$

22. A new § 86.113–82, which is identical to § 86.113–79 except for paragraph (a)(2), is added to read as follows:

§ 86.113–82 Fuel specifications.

(a) *Gasoline.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust and evaporative emission testing. Gasoline having the following specification or substantially equivalent specifications approved by the Administrator, shall be used by the manufacturer in exhaust and evaporative testing except that the lead and octane specifications do not apply.

Item	ASTM	Lowest	Unleaded
Octane, research, minimum	D2699	98	98
Sensitivity, minimum		7.5	7.5
Lead (organic), grams/U.S. gallon		[1] 1.4	0.05–.05
Distillation Range:			
IBP [2], °F	D86	75–95	75–95
10 pct point, °F	D86	120–135	120–135
50 pct point, °F	D86	200–230	200–230
90 pct point, °F	D86	300–325	300–325
EP, °F (maximum)	D86	415	415
Sulfur, weight percent, maximum	D1266	0.10	0.10
Phosphorus, grams/U.S. gallon, maximum		0.01	0.005
RVP [3] [4] pounds per square inch	D323	8.7–9.2	8.7–9.2
Hydrocarbon composition:			
Olefins, percent, maximum	D1319	10	10
Aromatics, percent maximum	D1319	35	35
Saturates	D1319	([5])	([5])

[1] Minimum.
[2] For testing at altitudes above 1,219 m (4,000 ft) the specified range is 75–105.
[3] For testing which is unrelated to evaporative emission control, the specified range is 8.0–9.2.
[4] For testing at altitudes above 1,219 m (4,000 ft) the specified range is 7.9–9.2.
[5] Remainder.

(2) Gasoline representative of commercial gasoline which will be generally available through retail outlets shall be used in service accumulation. For leaded fuel the minimum lead content shall be equal to the average lead content found in regular leaded gasoline in the fuel survey prescribed by the Administrator. Where the Administrator determines that vehicles represented by a test vehicle will be operated using gasoline of different lead content than that prescribed in this paragraph, he may consent in writing to use a gasoline with a different lead content. The octane rating of the gasoline used shall be no higher than 1.0 research octane number above the minimum recommended by the manufacturer and have a minimum sensitivity of 7.5 octane numbers for unleaded fuel and 7.0 octane numbers for leaded fuel, where sensitivity is defined as the Research octane number minus the Motor octane number. The Reid Vapor Pressure of the gasoline used shall be characteristic of the motor fuel used during the season in which the service accumulation takes place.

(3) The specification range of the gasoline to be used under paragraph (a)(2) of this section shall be reported in accordance with § 86.079–21(b)(3).

(b) *Diesel fuel.* (1) The diesel fuels employed for testing shall be clean and bright, with pour and cloud points adequate for operability. The diesel fuel may contain nonmetallic additives as follows: Cetane improver, metal deactivator, antioxidant, dehazer, antirust, pour depressant, dye, and dispersant.

(2) Diesel fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emission testing. The grade of diesel fuel recommended by the engine manufacturer, commercially designated as "Type 2D" grade diesel, shall be used.

Item	ASTM test method No.	Type 2–D
Cetane Number	D613, D86	42–50
Distillation range:		
IBP, °F		340–400
10 percent point, °F		400–490
50 percent point, °F		470–540
90 percent point, °F		550–610
EP, °F		580–690
Gravity, °API	D287	33–37
Total sulfur, percent	D129 or D2622	0.2–0.5
Hydrocarbon composition	D1319	
Aromatics, percent (minimum).		27
Paraffins, naphthenes, olefins.		([1])
Flashpoint, °F (minimum)	D93	130
Viscosity, centistokes	D445	2.0–3.2

[1] Remainder.

(3) Diesel fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in service accumulation. The grade of diesel fuel recommended by the engine manufacturer, commercially, designated as "Type 2–D" grade diesel fuel, shall be used.

Item	ASTM test method No.	Type 2–D
Cetane Number	D613	45–50
Distillation range:		
90 percent point °F	D86	630–650
Gravity °API	D287	32–42
Total sulfur, percent (minimum).	D129 or D2622	0.2
Flashpoint, °F (minimum)	D93	130
Viscosity, centistokes	D455	1.5–4.5

(4) Other petroleum distillate fuel specifications:

(i) Other petroleum distillate fuels may be used for testing and service accumulation provided they are commercially available, and

(ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service, and

(iii) Use of a fuel listed under paragraph (b)(2) and (b)(3) of this section would have a detrimental effect on emissions or durability, and

(iv) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

(5) The specification range of the fuels to be used under paragraphs (b)(2), (b)(3), and (b)(4) of this section shall be reported in accordance with §86.078–21(b)(3).

(c) Fuels not meeting the specifications set forth in this section may be used only with the advance approval of the Administrator.

23. Paragraph (a) of § 86.145–82 is revised to read as follows:

§ 86.145–82 Calculation; particulate emissions.

(a) The final reported test results for the mass particulate (M_p) in grams/mile shall be computed as follows.

$$M_p = 0.43(M_{p1} + M_{p3})/(D_{ct} + D_s) + 0.57(M_{p3} + M_{p2})/(D_{ht} + D_s)$$

Where:

* * * * *

24. A new § 86.307–82, which is identical to § 86.307–79 except for paragraphs (a)(2) and (c), is added to read as follows:

§ 86.307–82 Fuel specifications

(a) *Gasoline.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing. Gasoline having the following specifications or substantially equivalent specifications approved by the Administrator shall be used by the manufacturer in exhaust testing, except that the lead and octane specifications do not apply.

Item designation	ASTM	Leaded	Unleaded
Octane, research, minimum	D2699	100	[redacted]
PB (organic), grams/U.S. gallon		[1] 1.4	0.00–0.05
Distillation Range:			
IBP, °F	[redacted]	75–95	75–95
10 pct point, °F	D86	120–135	120–135
50 pct point, °F	[redacted]	200–230	200–230
90 pct point, °F	D86	300–325	300–325
EP, °F (maximum)	D86	415	415
Sulfur, weight percent, maximum	D1266	0.10	0.10
Phosphorus, grams/U.S. gallon, maximum		0.01	0.005
RVP pounds per square inch	D323	8.0–9.2	8.0–9.2
Hydrocarbon composition:			
Olefins, percent, maximum	D1319	10	10
Aromatics, percent maximum	D1319	35	[redacted]
Saturates	D1319	[2]	[2]

[1] Minimum.
[2] Remainder

(2) Gasoline representative of commercial gasoline which will be generally available through retail outlets shall be used in service accumulation. For leaded fuel the minimum lead content shall be equal to the average lead content found in regular leaded gasoline in the fuel survey prescribed by the Administrator. Where the Administrator determines that engines represented by a test engine will be operated using gasoline of different lead content from that prescribed in this paragraph, he may consent in writing to use of a gasoline with a different lead content. The octane rating of the gasoline used shall be no higher than 4.0 research octane numbers above the minimum recommended by the manufacturer and have a minimum sensitivity of 7.5 octane numbers for unleaded fuel and 7.0 octane numbers for leaded fuel, where sensitivity is defined as research octane number minus motor octane number.

(b) *Diesel Fuel.* (1) The diesel fuels employed for testing shall be clean and bright, with pour and cloud points adequate for operability. The diesel fuel may contain nonmetallic additives as follows: Cetane improver, metal deactivator, antioxident, dehazer, antirust pour depressant, dye, and dispersant.

(2) Diesel fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emissions testing. The grade of diesel fuel recommended by the engine manufacturer commercially designated as "Type 1–D" or "Type 2–D", shall be used.

Item	ASTM test method No.	Type 1–D	Type 2–D
Cetane Number	D613, D86	48–54	42–50
Distillation range:			
IBP, °F		[redacted]	[redacted]
10 percent point, °F		370–430	[redacted]
50 percent point, °F		410–480	470–540
90 percent point, °F		460–520	550–610
EP, °F		[redacted]	[redacted]
Gravity, °API	D287	40–44	33–37
Total sulfur, percent	D129 or D2622	0.05–0.02	0.2–0.5
Hydrocarbon composition	D1319		
Aromatics, percent (minimum		[1] 8	[1] 27
Paraffins, naphthenes, olefins		[2]	[2]
Flashpoint, °F (minimum)	D93	120	130
Viscosity, centistokes	D445	1.6–2.0	2.0–3.2

[1] Minimum.
[2] Remainder

(3) Diesel fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in service accumulation. The grade of diesel fuel recommended by the engine manufacturer, commercially designated as "Type 1–D" or "Type 2–D", shall be used.

Item	ASTM test method No.	Type 1–D	Type 2–D
Cetane (minimum)	D613	42–56	[redacted]
Distillation range 90 pct point, °F	D86	440–530	[redacted]
Gravity, °API	D287	[redacted]	[redacted]
Total sulfur, percent	D129 or D2622	0.05	0.2

[illegible]	ASTM test method No.	Type 1-D	Type 2-D
Flashpoint, °F (minimum)	D96	120	[illegible]
Viscosity, centistokes	D445	1.2–2.2	1.5–4.5

[illegible] Minimum.

(4) Other petroleum distillate fuels may be used for testing and service accumulation provided:

(i) They are commercially available;

(ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service;

(iii) Use of a fuel listed under paragraphs (b) (2) and (3) of this section would have a detrimental effect on emissions or durability; and

(iv) Written approval from the Administrator of the fuel specifications was provided prior to the start of testing.

(5) The specification range of the fuels to be used under subparagraphs (b)(2), (b)(3), and (b)(4) of this section shall be reported in accordance with § 86.082–21(b)(3).

(c) Fuels not meeting the specifications set forth in this section may be used only with the advance approval of the Administrator.

25. Paragraphs (a)(1) and (g) of § 86.308–79 are revised to read as follows:

§ 86.308–79 Gas specifications.

(a) Analyzer gases (1) calibration gases for the CO and CO_2 analyzers shall have zero grade nitrogen as a diluent. Combined CO and CO_2 span gases are permitted. Zero grade nitrogen shall be the diluent for CO and CO_2 span gases.

* * * * *

(g) Proportioning and blending devices may be used to obtain required gas concentration.

26. Paragraphs (a)(1) and (a)(2) of § 86.310–79 are revised to read as follows:

§ 86.310–79 Sampling and analytical system; component specifications.

(a) *Temperature.* (1) *For gasoline-fueled engines any heated component;*

(i) In the HC sample path must be maintained above 110°C (230°F) and shall not exceed 230°C (446°F),

(ii) In the NO_x sample path must be maintained above 60°C (140°F) and shall not exceed 230°C (446°F).

(2) *For Diesel engines any heated component;*

(i) In the HC sample path must be maintained above 180°C (356°F) and shall not exceed 230°C (446°F).

(ii) In the NO_x sample path must be maintained above 60°C (140°F) and shall not exceed 230°C (446°F).

* * * * *

27. Paragraph (e) of § 86.311–79 is revised to read as follows:

§ 86.311–79 Miscellaneous equipment specifications.

* * * * *

(e) If water is removed by condensation, the sample gas temperature or sample dew point must be monitored either within the water trap or downstream. It may not exceed 7°C (45°F).

* * * * *

28. A new paragraph (b)(7) is added to § 86.330–79 and reads as follows:

§ 86.330–79 NDIR analyzer calibration.

* * * * *

(b) * * *

(7) If multiple range analyzers are used, only the lowest range must meet the curve fit requirements below 15 percent of full scale.

* * * * *

29. Paragraph (a) of § 86.332–79 is revised; new paragraphs (d) and (e) are added to read as follows:

§ 86.332–79 Oxides of nitrogen analyzer calibration.

(a) Perform a converter-efficiency check (see paragraph (b) of this section), every 7 days. Every 30 days perform a linearity check (see paragraph (c) of this section), which must be followed by a converter efficiency check. However, if the converter quick-check (see paragraphs (d) and (e) of this section) is performed every 7 days, the full converter efficiency check need only be performed every 30 days.

* * * * *

(d) *Converter checking gas.* If the converter quick-check procedure is to be employed, paragraph (e) of this section, a converter checking gas bottle must be named. The following naming procedure must occur after each converter efficiency check, paragraph (b) of this section.

(1) A gas bottle with an NO_2 concentration equal to approximately 80 percent of the most common operation range shall be designated as the converter checking gas bottle. Its NO concentration shall be less than 25 percent of its NO_2 concentration, on a volume basis.

(2) On the most common operating range, zero and span the analyzer in the NO_x mode. Use a calibration gas with a concentration equal to approximately 80 percent of the range for spanning.

(3) Introduce the converter checking gas. Analyze and record concentrations in both the NO_x mode (X) and NO mode (Y).

(4) Calculate the concentration of the converter checking gas using the results from step (3) and the converter efficiency from paragraph (b) as follows.

$$\text{Concentration} = \frac{(X-Y) \times 100}{\text{Efficiency}} + Y$$

(e) *Converter quick-check.* (1) Span the analyzer in the normal manner (NO_x mode) for the most common operating range.

(2) Analyze the converter checking gas in the NO_x mode, record the concentration.

(3) Compare the observed concentration with the concentration assigned under the procedure in paragraph (d) of this section. If the observed concentration is equal to or greater than 90 percent of the assigned concentration, the converter operation is satisfactory.

30. Paragraph (b)(6) of § 86.337–79 is revised to read as follows:

§ 86.337–79 Information.

* * * * *

(b) * * *

(6) Fuel identification.

* * * * *

31. Paragraph (a)(6) of § 86.338–79 is revised to read as follows:

§ 86.338–79 Exhaust measurement accuracy.

(a) * * *

* * * * *

(6) The HC analyzer's response may be less than 15 percent of full-scale when transient emissions (spikes) can be reasonably expected to exceed 90 percent of full-scale. Higher analyzer ranges may be used provided that the precision and linearity of the anlyzer at the level of the readings below 15 percent meets the specifications of the range that would be required if the transient emissions did not exist.

* * * * *

32. Paragraph (c)(1)(ii) and (c)(2) of § 86.340–79 are revised to read as follows:

§ 86.340–79 Gasoline-fueled engine dynamometer test run.

* * * * *

(c) * * *

(1) * * *

(ii) A torque equivalent to 10±3 percent of the most recent determination of maximum torque for 4 minutes ±30 second at 2,000 rpm. This torque level may be exceeded if the choke and fast idle cam mechanism would normally result in a stabilized idle speed in excess of 2,000 rpm.

* * * * *

(2) If tested under the provisions of § 86.079–29, check specifications as required. This check must be performed within 20 minutes after completion of engine preconditioning;

* * * * *

33. Paragraph (b) of § 86.341–79 is revised to read as follows:

§ 86.341–79 Diesel engine dynamometer test run.

* * * * *

(b) The temperature of the air supplied to the engine shall be between 68°F and 86°F. The fuel temperature at the pump inlet shall be 100°F±10°F. The observed barometric pressure shall be between 28.5 inches and 31 inches Hg. Higher air temperature or lower barometric pressure may be used, if desired, but no allowance shall be made for increased emissions because of such conditions unless correction factors are developed and approved in advance by the Administrator.

* * * * *

34. Paragraph (a)(1) of § 86.342–79 is revised to read as follows:

§ 86.342–79 Post-test procedures.

(a) * * *

(1) Introduce a zero-grade gas or room air into the sample probe or valve V2 to check the "hangup zero" response. Simultaneously start a time measurement.

* * * * *

35. A new § 86.348–79 is added and reads as follows:

§ 86.348–79 Alternative to fuel H/C analysis.

(a) Fuel H/C analysis need not be performed if the following average H/C ratios are used for all calculations.

(1) #1 Diesel: 1:93

(2) #2 Diesel: 1:80

(3) Gasoline: 1.85

36. Paragraphs (a)(2)(ii) and (b)(3) of § 86.437–78 are revised to read as follows:

§ 86.437–78 Certification.

(a) * * *

(2) * * *

(ii) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary to assure that any new motorcycle covered by the certificate will meet the requirements of the act and of this subpart.

* * * * *

(b) * * *

(3) Such certificate will be issued for such a period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary to assure that any new motorcycle covered by the certificate will meet the requirements of the Act and of this subpart.

* * * * *

37. A new § 86.513–82, which is identical to § 86.513–78 except for paragraphs (b) and (e), is added to read as follows:

§ 86.513–82 Fuel and engine lubricant specifications.

(a) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing. Gasoline having the following specifications or substantially equivalent specifications approved by the Administrator, shall be used by the manufacturer for emission testing except that the lead and octone specifications do not apply.

Item designation	ASTM	Leaded	Unleaded
Octane, research, minimum	D2699	100	96.
PB (organic), grams/litre		0.370 (1.4) min	0.000–0.013.
(grams/U.S. gallon)			(0.00–0.05).
Distillation Range	D86		
IBP, °C (°F)		23.9–35 (75–95)	23.9–35 (75–95)
10 pct point, °C (°F)		48.9–57.2	48.9–57.2.
		(120–135)	(120–135).
50 pct point, °C (°F)		93.3–110	93.3–110.
		(200–230)	(200–230).
90 pct point, °C (°F)		148.9–162.8	148.9–162.8
		(300–325)	(300–325).
EP, °C (°F) (maximum)		212.8 (415)	212.8 (415).
Sulfur, weight percent, maximum	D1266	0.10	0.10.
Phosphorus, grams/litre (grams/U.S. gallon), maximum		0.0026 (0.01)	0.0013 (0.005).
RVP, KPa (psi)	D323	55.2–63.4	55.2–63.4
		(8.0–9.2)	(8.0–9.2).
Hydrocarbon composition:			
Olefins, percent, maximum	D1319	10	10.
Aromatics, percent maximum		35	35.
Saturates		Remainder	Remainder.

(b) Gasoline and engine lubricants representative of commercial fuels and engine lubricants which will be generally available through retail outlets shall be used in service accumulation. For leaded fuel the minimum lead content shall be equal to the average lead content found in regular leaded gasoline in the fuel survey prescribed by the Administrator. Where the Administrator determines that vehicles represented by a test vehicle will be operated using gasoline of different lead content than that prescribed in this paragraph, he may consent in writing to use a gasoline with a different lead content. The octane rating of the gasoline used shall be no higher than 4.0 research octane numbers above the minimum recommended by the manufacturer. The Reid Vapor Pressure of the fuel used shall be characteristic of the motor fuel during the season which the service accumulation takes place. If the manufacturer specifies several lubricants to be used by the ultimate purchaser, the Administrator will select one to be used during service accumulation.

(c) The specification range of the fuels and engine lubricants to be used under paragraph (b) of this section shall be reported in accordance with § 86.416.

(d) The same lubricant(s) shall be used for both service accumulation and emission testing.

(e) Fuels not meeting the specifications set forth in this section may be used only with the advance approval of the Administrator.

38. Paragraph (a)(3) of § 86.879–11 is revised to read as follows:

§ 86.879–11 Instrument checks.

(a) * * *

(3) Calibrated neutral density filters having approximately 10, 20, and 40 percent opacity shall be employed to check the linearity of the instrument. The filter(s) shall be inserted in the light path perpendicular to the axis of the beam and adjacent to the opening from which the beam of light from the light source emanates, and the recorder response shall be noted. Filters with exposed filtering media shall be checked for opacity every 6 months; all other filters shall be checked every year, using NBS or equivalent reference filters. Deviations in excess of 1 percent of the nominal opacity shall be corrected.

* * * * *

39. Paragraph (a)(2) of § 86.1313–84 is revised to read as follows:

§ 86.1313-84 Fuel specifications.

(a) * * *

(2) Gasoline representative of commercial gasoline which will be generally available through retail outlets shall be used in service accumulation. For leaded fuel the minimum lead content shall be equal to the average lead content found in regular leaded gasoline in the fuel survey prescribed by the Administrator. Where the Administrator determines that vehicles represented by a test vehicle will be operated using gasoline of different lead content than that prescribed in this paragraph, he may consent in writing to use of a gasoline with a different lead content. The octane rating of the gasoline used shall be not higher than 1.0 Research octane number above the minimum recommended by the manufacturer and have a minimum sensitivity of 7.5 octane numbers for unleaded fuel and 7.0 octane numbers for leaded fuel, where sensitivity is defined as the Research octane number minus the Motor octane number. The Reid Vapor Pressure of the gasoline used shall be characteristic of the motor fuel used during the season in which the service accumulation takes place.

* * * * *

40. The table of contents of Part 600 is revised to read as follows:

PART 600—FUEL ECONOMY OF MOTOR VEHICLES

Subpart A—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—General Provisions

Sec.
600.001-77 General applicability.
600.002-80 Definitions.
600.003-77 Abbreviations.
600.004-77 Section numbering, construction.
600.005-77 Maintenance of records and right of entry.
600.006-77 Data to be submitted.
600.007-77 Vehicle acceptability.
600.007-80 Vehicle acceptability.
600.008-77 Review of fuel economy data, testing by the administrator.
600.009-77 Hearings on acceptance of test data.
600.010-77 Vehicle test requirements.

Subpart B—Fuel Economy Regulations for 1978 and Later Model Year Automobiles—Test Procedures

600.101-78 General applicability.
600.102-78 Definitions.
600.103-78 Abbreviations.
600.104-78 Section numbering, construction.
600.105-78 Record keeping.
600.106-78 Equipment requirements.
600.107-78 Fuel specifications.
600.108-78 Analytical gases.
600.109-78 EPA driving cycles.
600.110-78 Equipment calibration.
600.111-80 Test procedures.
600.112-78 Exhaust sample analysis.
600.113-78 Fuel economy calculations.

Subpart C—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Procedures for Calculating Fuel Economy Values.

600.201-77 General applicability.
600.202-77 Definitions.
600.203-77 Abbreviations.
600.204-77 Section numbering, construction.
600.205-77 Record keeping.
600.206-80 Calculation of fuel economy values for a vehicle configuration.
600.207-79 Calculation and use of fuel economy values for a model type.
600.207-80 Calculation and use of fuel economy values for a model type.
600.208-77 Sample calculation.

Subpart D—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Labeling

600.301-77 General applicability.
600.302-77 Definitions.
600.303-77 Abbreviations.
600.304-77 Section numbering, construction.
600.305-77 Recordkeeping.
600.308-79 General label contents.
600.309-79 Specific label contents.
600.310-77 Labeling of high altitude vehicles.
600.311-79 Range of fuel economy for comparable automobiles.
600.312-79 Approval of labels.
600.313-79 Timetable for data and information submittal and review.
600.314-77 Updating fuel economy, annual fuel cost, and range of fuel economy for comparable automobiles.
600.316-78 Multistage manufacturer.

Subpart E—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Dealer Availability of Fuel Economy Information

600.401-77 General applicability.
600.402-77 Definitions.
600.403-77 Abbreviations.
600.404-77 Section numbering, construction.
600.405-77 Dealer requirements.
600.406-77 [Reserved]
600.407-77 Booklets displayed by dealers.

Subpart F—Fuel Economy Regulations for Model Year 1978 Passenger Automobiles and for 1979 and Later Model Year Automobiles (Light Trucks and Passenger Automobiles)—Procedures for Determining Manufacturer's Average Fuel Economy

600.501-79 General applicability.
600.502-79 Definitions.
600.503-78 Abbreviations.
600.504-78 Section numbering, construction.
600.505-78 Record keeping.
600.506-79 Preliminary determination of manufacturer's average.
600.507-78 Running change data requirements.
600.508-78 Addition of a base level-data requirements.
600.509-78 Voluntary submission of additional data.
600.510-80 Calculation of average fuel economy.
600.511-80 Determination of domestic production.
600.512-80 Model year report.
600.513-81 Gas Guzzler Tax.

Appendix I—Highway Fuel Economy Driving Schedule
Appendix II—Sample Test Value Calculations
Appendix III—Sample Fuel Economy Label Calculation (1977 Model Year)
Appendix IV—Sample Fuel Economy Label Formats
Appendix V—Optional Fuel Economy Label Format for the 1978 Model Year
Appendix VI—1979 Model Year Fuel Economy Label Format

41. The authority for Part 600 reads as follows:

Authority: 15 U.S.C. 2003.

42. A new § 600.006-82, which is identical to § 600.006-81 except for the revised title, revised paragraphs (a), (c)(1), (c)(2), and added paragraph (g), is added to read as follows:

§ 600.006-82 Data and information requirements for fuel economy vehicles.

(a) For certification vehicles with less than 10,000 miles, the requirements of this section are considered to have been met except as noted in paragraph (c) of this section.

(b) The manufacture shall submit the following information for each fuel economy data vehicle:

(1) A description of the vehicle, exhaust emission test results, applicable deterioration factors, and adjusted exhaust emission levels.

(2) A statement of the origin of the vehicle including total mileage, mode of mileage accumulation, and modifications (if any) from the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle

was previously used for testing for compliance with Part 86 of this chapter or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this paragraph may be satisfied by reference to the vehicle number and previous configuration.

(3) A description of all maintenance to engine, emission control system, or fuel system components performed within 2,000 miles prior to fuel economy testing. In the case of electric vehicles, the manufacturer should provide a description of all maintenance to electric motor controller, battery configuration, or other components performed within 2,000 miles prior to fuel economy testing.

(4) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the actual components on the test vehicle as well as the design tolerances. In the case of electric vehicles, the manufacturer should provide a copy of calibrations for the electric motor, motor controller, battery configuration, or other components on the test vehicle as well as the design tolerances. (If calibrations for components were submitted previously as part of the description of another vehicle or configuration, the original submittal may be referenced.)

(5) A statement that the fuel economy data vehicle, with respect to which data are submitted:

(i) Has been tested in accordance with applicable test procedures.

(ii) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed, and

(iii) Is in compliance with applicable exhaust emission standards.

(c) The manufacturer shall submit the following fuel economy data:

(1) For vehicles tested to meet the requirements of Part 86 (other than those chosen in accordance with § 86.082-24(c) and (h)), the city of highway fuel economy results from all tests on that vehicle, and the test results adjusted in accordance with paragraph (g) of this section.

(2) For each fuel economy data vehicle, all individual test results (excluding results of invalid and zero mile tests) and the test results adjusted in accordance with paragraph (g) of this section.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling, etc.).

(e) In lieu of submitting actual data from a test vehicle, a manufactuer may provide fuel economy values derived from an analysis. In order for fuel economy values derived from analytical methods to be accepted, the expression (form and coefficients) must have been approved by the Administrator.

(f) If, in conducting tests required or authorized by this part, the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in § 86.079-21, the manufacturer shall submit a description of such procedures, equipment, and facilities.

(g) For test data generated by certification vehicles selected under 40 CFR 86.082-24(b) with engine system combination at more than 10,000 kilometers (6,200 miles) accumulation, the manufacturer shall adjust the test data using either of the following equations:

$FE_{6,400km} = FE_T [0.969 + 0.523 \times 10^{-5} (km)]^{-1}$
Equation A

$FE_{4,000m} = FE_T [0.969 + 0.842 \times 10^{-5} (m)]^{-1}$
Equation B

Where:

$FE_{6,400km}$ = Fuel economy data adjusted to 6,400-kilometer test point

$FE_{4,000m}$ = Fuel economy data adjusted to 4,000-mile test point

FE_T = Tested fuel economy value

km = Kilometer accumulation at test point

m = Miles accumulation at test point

(1) The adjusted values, rounded to 0.1 mpg, shall be considered the official data for that test.

(2) For vehicles with 10,000 kilometers (6,200 miles) or less accumulated, the manufacturer is not required to adjust the data.

§§ 86.077-1 through 86.077-39 [Removed]

43. Sections 86.077-1 through 86.077-39 are removed.

§§ 86.078-1, 86.078-2, 86.078-5, and 86.078-8 through 86.078-39 [Removed]

44. Sections 86.078-1, 86.078-2, 86.078-5, and sections 86.078-8 through 86.078-39 are removed.

§§ 86.079-1 through 86.079-11, 86.079-21 through 86.079-26, 86.079-28 through 86.079-30, 86.079-35, and 86.079-38 [Removed]

45. Sections 86.079-1 through 86.079-11, 86.079-21 through 86.079-26, 86.079-28 through 86.079-30, 86.079-35 and 86.079-38 are removed.

§§ 86.080-2, 86.080-8, 86.080-24, and 86.080-26 [Removed]

46. Sections 86.080-2, 86.080-8, 86.080-24, and 86.080-26 are removed.

§§ 86.081-1, 86.081-2, 86.081-14 through 86.081-28, 86.081-30, and 86.081-35 [Removed]

47. Sections 86.081-1, 86.081-2, 86.081-14 through 86.081-28, 86.081-30, and 86.081-35 are removed.

§§ 86.108-78, 86.113-78, 86.113-79, 86.114-78, 86.128-78, 86.129-78, 86.129-79, 86.135-78, 86.142-78, and 86.142-79 [Removed]

48. Sections 86.108-78, 86.113-78, 86.113-79, 86.114-78, 86.128-78, 86.129-78, 86.129-79, 86.135-78, 86.142-78, and 86.142-79 are removed.

§§ 86.177-1 through 86.177-23 [Removed]

49. Sections 86.177-1 through 86.177-23 are removed.

§ 86.307-79 [Removed]

50. Section 86.307-79 is removed.

§§ 86.410-78, 86.416-78, and 86.428-78 [Removed]

51. Sections 86.410-78, 86.416-78, and 86.428-78 are removed.

§ 86.513-78 [Removed]

52. Section 86.513-78 is removed.

53. Subparts H and J of Part 86 are removed.

§§ 600.002-77, 600.002-78, 600.002-79 [Removed]

54. Sections 600.002-77, 600.002-78, 600.002-79 are removed.

§ 600.111-78 [Removed]

55. Section 600.111-78 is removed.

§§ 600.206–77, 600.206–79, and 600.207–78 [Removed]

56. Sections 600.206–77, 600.206–79, and 600.207–78 are removed.

§§ 600.306–77, 600.306–78, 600.306–79, 600.306–80, 600.307–77, 600.307–78, 600.307–79, 600.307–80, 600.308–77, 600.308–78, 600.309–77, 600.309–78, 600.311–77, 600.312–77, 600.313–78, 600.315–78, and 600.315–79 [Removed]

57. Sections 600.306–77, 600.306–78, 600.306–79, 600.306–80, 600.307–77, 600.307–78, 600.307–79, 600.307–80, 600.308–77, 600.308–78, 600.309–77, 600.309–78, 600.311–77, 600.312–77, 600.313–78, 600.315–78, and 600.315–79 are removed.

§§ 600.501–78, 600.502–78, 600.506–78, 600.507–78, 600.507–79, 600.510–78, 600.510–79, 600.511–78, 600.512–78, 600.512–79, and 600.513–80 [Removed]

58. Sections 600.501–78, 600.502–78, 600.506–78, 600.507–78, 600.507–79, 600.510–78, 600.510–79, 600.511–78, 600.512–78, 600.512–79, and 600.513–80 are removed.

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